MEDICAL REPOSITORY,

FOR

NOVEMBER AND DECEMBER, 1803, AND JANUARY, 1804.

ARTICLE I.

A CASE *of* EXTRA-UTERINE FŒTUS, *with some Observations on the Subject generally. In a Letter from* DAVID RAMSAY, *M. D. to Dr.* MITCHILL, *dated Charleston (S. C.), Sept.* 1, 1803.

ON the 5th of June, 1803, I was requested by Mr. Osborn to visit his wench Chloe, who was twenty-five years of age, and had been, in general, healthy. I found her in the hands of a midwife, who was attending for the purpose of delivering her of her first child; it having been supposed that she was not only come to the full period of pregnancy, but to have gone one, two, or three months beyond it. For the first six months of the preceding eleven she had a trifling show of the menses, but for the last five nothing of the kind had taken place. On examination, I found her extremities cold, her pulse scarcely to be felt, and her respiration quick and laborious. Though her pains were great, there was no evidence of their being what are properly called labour-pains. Blisters and stimulant medicines were applied. These raised her pulse, and restored a natural heat to the extremities. An irregular remitting fever followed, which was frequently attended with distressing pains; but there was no evidence of advancing labour. The usual medicines for cooling fever were given, but without any great or permanent effect. The fever returned daily, and the symptoms of danger increased. A fluctuation of water was at this time distinctly felt in the abdomen. In this new view of the case, cathartic and diuretic medicines were freely given from the 9th to the 14th of June. These brought away several pints of dark-coloured, dirty, loose motions, and also an increased quantity of urine. Though the size of the abdomen was lessened, its tension and

hardness became more evident. All this time the fever and other alarming symptoms continued with little or no abatement. I was now satisfied in my opinion I had for some time entertained of the existence of an extra-uterine fœtus, and communicated that opinion to Dr. Prioleau, with whose accurate knowledge of anatomy, and dexterity in performing surgical operations, I was well acquainted, and requested him to visit the patient with me. On the 16th of June we came prepared with suitable instruments to do what was necessary in case of an extra-uterine fœtus. To our great mortification, we had no opportunity of [illegible] the patient for, in compliance with the wishes of [illegible] and [illegible] she had, on the morning of that day, been put under the care of a coloured man. I saw and [illegible] the patient for four weeks. It was then discovered that her umbilicus, after projecting two inches, had broke, and discharged several quarts of fœtid, purulent matter; that great relief followed, and a speedy cure was consequently expected. After examining the case, I gave an opinion that these hopes were fallacious, and that nothing short of a serious operation would give the patient any chance of recovery. Dr. Irvine visited her on the same day, and pronounced that an extra-uterine fœtus was the cause of her complaints; but neither of us knew of the visit or opinion of the other. In a day or two the patient was visited by Drs. Irvine, Prioleau, and myself together. After conferring on the case, it was resolved that her abdomen should be laid open to examine for a misplaced fœtus. The patient was at this time greatly reduced by wasting hectic fevers. The operation was performed, on the 17th of July, by Dr. Prioleau, with the concurrent advice of Dr. Irvine and myself, and in the presence of us both, and also of Dr. Foisin.

A long probe was first introduced into the ruptured umbilicus, which easily turned round in all directions from three to four inches. In the left side of the linea alba nothing was felt; but on its right an extraneous substance resisted the probe, which was supposed to be a fœtus, from the circumstance of hair being discharged with the matter from the umbilicus for several days preceding. An incision was next made through the linea alba into the cavity of the sac enveloping the fœtus, to the extent of four inches and an half, partly above and partly below the umbilicus. The hand being introduced, the fœtus was immediately found on the right side of the linea alba, and easily extracted through the opening. The bones

of the head being loose, no brains were contained therein. In other respects the fœtus came away whole, with the exception of some of the small joints of the fingers, and one of the ossa parietalia. These were immediately found and brought away. A considerable quantity of fœtid purulent matter was at the same time discharged.

The fœtus was apparently full grown, being thirteen inches long, but was greatly emaciated. Scarcely any thing remained but skin and bones, and these had a putrid, offensive smell. The spine and adjacent parts were stripped of their integuments.

A placenta, very much shrunken, was found, and also the two ends of the funis umbilicalis, each about three inches long; one of which was fastened to the placenta, and the other to the umbilicus of the fœtus. These extremities were not united. The intermediate parts were supposed to have been dissolved. On the placenta were the remains of the usual membranes, and these membranes had the appearance of being reflected as they are in ordinary cases, when the child is in its proper place. The fœtus and placenta, with its proper membranes, were completely enveloped in a sac or adventitious uterus, which was about the tenth of an inch thick, the anterior or upper side of which firmly adhered to that part of the peritonæum which lines the abdominal muscles. The colour of as much of the sac as was brought into view was of a palish white, inclining to a light blue, very similar in appearance to the internal surface of the uterus.

After the fœtus and secundines were extracted, the matter remaining in the sac was carefully pressed out. Lint was introduced into the orifice of the sac, to prevent its closing, and the sides of it were brought into contact, by means of compression and bandage, with a view of promoting their adhesion. On the second day the sac put on a slight blush of inflammation, which gradually increased for some days. In the course of a week complete adhesion had taken place in that part of the sac which was on the left of the linea alba, and the depth on the right had diminished.

During this time, by the aid of wine, bark, elixir of vitriol, and a nourishing diet, the hectic symptoms of the patient were lessened, and her strength considerably increased.

About eight days after the operation, a considerable degree of fever, with laborious respiration and distressing cough, excited alarming apprehensions. The fever and cough were at first relieved by diaphoretic and mucilaginous medicines, com-

blood with suppuration; but, in consequence thereof, the preceding healthy aspect of the wound disappeared, and a serious discharge came in place of blood thick pus.

To restore activity to the parts, and to bring on inflammation as a means of promoting adhesion, recourse was had to stimulating injections with great apparent benefit.

While the healing of the wound and the adhesion of the sac were daily advancing, a cough, which had been more or less troublesome for some weeks, became considerably worse about the latter end of July, and was attended with an irregular fever. Tonic, pectoral, and febrifuge medicines were carefully administered, but without abating either the cough or fever; and, in consequence of their violence, the patient expired on the 30th of August, and on the twenty-fourth day after she had been freed from her extra-uterine fœtus. Her body being opened by Dr. Baillie, the sac in which the fœtus had been lodged was found to be considerably diminished, partly from a general contraction of its parts, and partly from the union of its sides, in their extremities.

It adhered anteriorly to the peritonæum, and at its bottom to part of the fundus uteri, and the right ligamentum of the uterus. By this adhesion it was kept in a fixed situation, not liable to have its position changed by the motion of the body.

That this sac was not an enlargement of the Fallopian tubes, nor of the ovaria (as is generally supposed), was evident to the eye. The Fallopian tubes were in their natural state. The left ovarium appeared but a very little larger than usual, and contained a small proportion of pus. The right ovarium was small, probably from pressure, but was, in all other respects, natural, and had its ordinary proportion of ova. The uterus was sound and entire, and without any appearance of its ever having been impregnated. A large abscess was discovered in the right hypochondrium, between the diaphragm and the liver, which contained upwards of a quart of well formed pus. The viscera of the abdomen were in their natural state, except a small part of the liver, which was of a light yellow colour. The viscera of the thorax were perfectly natural. From the profuse expectoration of pus which preceded the death of the patient, abscesses in the lungs were looked for, but there was not a subscicle to be felt, nor the least appearance of disease in either lobe. No communication between the lungs and the abscess could be discovered.

This large collection of matter was doubtless the cause of the patient's death, and was largely supplied by the violent and

being manifested inflammation, which, in the lowest part of
umbilicus, proceeded and effected, by means of suppuration, the
rupture of the umbilicus, and which must have continued
after that event, till the complete extraction of the fœtus on
the 17th of July. Had the operation been performed earlier,
much of this inflammation and suppuration would have been
prevented, and the chance of recovery would doubtless have
been greater.

In taking a general view of extra-uterine fœtuses, our inquiries are naturally directed to the following particulars.—How does the fœtus get without the uterus? How is it nourished there? From what materials is the enveloping sac, or adventitious uterus furnished? What is the usual progress and issue of such cases? What results can be drawn from the whole to direct our practice?

If, agreeable to received opinion, impregnation takes place without the uterus, in or near the ovaria, it would seem so probable that the impregnated ovum would either drop into the abdomen, or become stationary in the appendages of the uterus, as that it would find its way back into it. That extra-uterine fœtuses sometimes occur, is not so wonderful as that they are so rare. The infrequency of such cases is a proof of the wisdom and goodness of that incomprehensible Being, "in whose book all our members were written, when as yet there was none of them."

The growth and nourishment of extra-uterine fœtuses is as regular as that of those which are located in their proper places. Are we not warranted, from this, to suppose, that wherever the impregnated ovum is lodged, the external surface adheres, and, forming a placenta, absorbs nourishment from the parts with which it is in contact, in the same manner as if it had been lodged in the uterus; and, consequently, that the uterus does not perform its office by any specific action or quality?

The sac which envelopes misplaced fœtuses must either be an expansion of one of the Fallopian tubes, or of one of the ovaria, or of some of the membranes which naturally cover the ovaria, or, more probably, an adventitious membrane produced by all-provident Nature for the special purpose. This latter opinion is, in general, most probable, and demonstrably certain in the present case; for the uterus and its appendages were whole and entire, and the usual membranes of the fœtus could be traced, being reflected from the placenta totally distinct from the sac in which the whole was enclosed.

When the period of utero-gestation is completed, the extra-uterine fœtus excites a disturbance in the system like to natural labour. This continues till the child is dead, and is sometimes renewed afterwards. From the regular appearance of labour at or near to the end of nine months, in case of extra-uterine fœtuses as well as of others (though in the former case it must be unavailing), have we not reason to conclude that labour is not excited by any faculty of the uterus, but by some state or quality of the child?

After the misplaced fœtus is dead, it sometimes remains comparatively harmless (except from its bulk) for the rest of the patient's life. In other cases, like any offending extraneous substance, it produces inflammation and suppuration, with all their disagreeable consequences. Medical records assure us that fœtuses of the first kind have lain in the abdomen, for different periods, to the extent of sixteen years, and, in the mean time, the patients have suffered neither constant nor very distressing inconveniences, and borne children that were alive and healthy. This happened to Mrs. Ball, who died in Guy's Hospital, in the year 1747, after she had carried within her a dead extra-uterine fœtus sixteen years, during which time she had four children, all born alive.

When inflammation and suppuration take place, the result is not always uniform, and is materially influenced by climate, season, and other circumstances. The progress is sometimes so gradual that a new child has been conceived and born, while its unexpelled predecessor was slowly undermining the health of their common mother.

An instance of this occurred in New-York, in the year 1759, in the case of Mrs. Stagg, who was delivered of a healthy child nearly two years subsequent to the death of an extra-uterine fœtus, which excited long and extensive suppuration, and was cut out from her abdomen by Dr. Bard, about two months after the natural birth of its successor. The woman recovered, and suckled her living child.

If the fœtus is not thrown off by the suppurating process, the patient must, in time, be destroyed by hectic fever; but this catastrophe is frequently prevented by the powerful operations of nature in expelling the offending substances through the natural passages, or the suppurating integuments of the abdomen.

From the whole the following practical conclusion may be drawn.

We should endeavour, as soon as possible, to ascertain that

the fœtus is extra-uterine. Our inquiries on this subject are rendered more difficult from the circumstance that the same symptoms are produced in the early part of pregnancy, whether the fœtus be within or without the cavity of the uterus. If it was known in due time that it was extra-uterine, the life of both mother and child might be saved by an operation that is easier and safer than the Cæsarian operation, and less painful than natural labour in many difficult cases where the child is ushered into life by the usual passage.

To assist our conjectures in this inquiry, I observe that as extra-uterine fœtuses lie almost wholly either on the right or left side of the umbilicus, the swelling of the abdomen will, in such cases, be more unequal than is usual. They are also less strong and lively, and their mothers more subject to fevers and strange anomalous complaints than in ordinary pregnancies.

When labour-pains attack a patient situated as above, without any flow of the waters, or any other discharge, and, at the same time, the evidences of an impregnated uterus are wanting, there is reason to suspect that the fœtus is misplaced. The patient should be constantly watched—every symptom noted—light sought from all quarters—and an opinion formed, after weighing all circumstances.

In doubtful cases delay is best; but if this be carried beyond a certain point, the loss of the child is inevitable. When that point is passed, and the operation can be no longer urged with the hope of saving the child, further delay is adviseable; for the patient generally gets better, and time only can unfold the future changes of the lifeless fœtus. If it produces no disturbance in the system, nothing should be done; but if it excites inflammation and suppuration, the greatest attention is requisite to assist nature in her efforts to expel the offending substance. These efforts tend either to the intestines, the vagina, or through the integuments of the abdomen.

In the two former cases the process should, in a great degree, be left to the natural action of the constitution. In both cases a large quantity of purulent matter is first discharged; afterwards the same matter, mingled with hair or membranous substances; next the small bones of the fœtus; and, lastly, the large ones. If any of these lie across the natural outlets, they should either be brought away piecemeal, or their position altered so as to favour their expulsion: but if the offending parts show a disposition to form an abscess in any part of the abdomen, poultices, fomentations, and the knife of the

surgeon, must be applied according to circumstances, so as to free the system as soon as possible.

It is a matter of consolation, that, after the extraction of the extra-uterine fœtus is completed, the parts gradually recover from the injury they have sustained, without any remaining mischief, and the patient often enjoys as good health as those who have been safely delivered in the ordinary way.

ARTICLE II.

MEMOIR, *by M.* DE CARENDEFFEZ, *on* GALVANIC ELECTRICITY, *the Electrats, Hydrurets,* and Metallic Atmosphere obtained from* VOLTA'*s Pile, which may be advantageously substituted in Place of the Electrical Machine generally used, in every Case where Electricity is necessary. Translated and communicated by* JAMES S. STRINGHAM, *M. D. Professor of Chemistry in Columbia College.*

THERE are but very few persons conversant in medicine, who are unacquainted with the good effects of electricity in the healing art, particularly when administered by skilful hands. The experiments which have been made in every part of Europe prove, beyond all doubt, that the electric and Galvanic fluids are, in reality, one and the same agent, whatever means the philosopher may employ to produce them.

It is unnecessary here to enter into a minute detail of the various experiments which have been made in order to demonstrate the analogy between these two fluids: from a careful repetition of them, I feel no hesitation in enlisting myself under the banners of those distinguished characters, who have demonstrated the identity of causes by that of effects; hence, no doubt can be entertained as to the decision which ought to be made upon the subject; for it is as impossible that effects absolutely similar, should arise from causes essentially different, as that effects specifically different should be produced by the same natural causes.

All the ideas which I have acquired upon this subject, whether from my own observation, or from those who were oc-

* The metallic hydrurets were unknown to the immortal Lavoisier; nevertheless he believed their existence possible, and experiments have since proved that his presentiments were well founded.

cupied with common electricity or Galvanism, have led me to consider it under a point of view somewhat different from that with which it was formerly regarded. Happy should I esteem myself were I the instrument of suggesting even a single idea, which (as I hope to prove) may be of some use to the human race, in furnishing it with one more remedy against that cohort of diseases by which it is perpetually assailed.

All bodies are more or less subjected to the influence of electricity. Metals, in particular, possess the remarkable property of absorbing and transmitting it with equal facility. With the exception of caloric, it is, perhaps, the only agent in nature by which they can be penetrated without becoming more or less altered. It is in consequence of this absorbing and transmitting quality that metals have been preferred by physicians, for directing and introducing this fluid into the system. It is by their assistance that we are enabled so powerfully to irritate the nerves, when different metals are made to come in contact with the muscles, as was first discovered by Galvani, an Italian physician, whence it has derived the name of Galvanism. We shall see from what follows, that this excitement is not entirely owing to the difference of the metals, as has been hitherto supposed; that they have no other effects, no other property in my opinion, than that of transmitting the fluid; and that the real principle of irritability is quite different from what has been generally imagined. The effects of Galvanism are so sudden and so active, that, like lightning or ordinary electricity, it has the property of melting, dissolving, and volatilizing even those metals which are the most infusible, and the most difficultly oxydated, such as silver, gold, and platinum; its action is so powerful, that it easily evaporates them, as I have convinced myself by a repetition of the experiments which have been made in Europe.

It may be proper to mention here, that to succeed in this, it is essential that the metals be in very fine wires, or in very thin leaves. It was formerly supposed, that, in order to effect this combustion, it was necessary that the surfaces of the disks should be of a very large diameter; that to obtain strong shocks, a very high pile was required; that this last did not oxydate metals, although it was capable of giving powerful shocks; while the former, composed only of eight or ten strata, oxydated and burnt metals very easily, but without producing shocks, &c.

The results of my experiments are, however, altogether opposite to these opinions. I shall endeavour to show, that

the real cause of these different phenomena is only to be attributed to the different chemical agents employed for obtaining the one or the other of the above effects. I shall notice, for instance, sal ammoniac (muriate of ammonia), which has succeeded, with me, better than any of the other salts. In order to prove this fact beyond all doubt, I had constructed a pile of Volta, consisting of from ninety to one hundred plates, of the diameter of a dollar, instead of those large surfaces which have been so constantly used in Europe. I dissolved one ounce of sal ammoniac in about one pound of water; with this I wet the pieces of cloth which were to be placed between each stratum. My pile finished, I took different metallic wires in succession, the one extremity of which I fixed to the negative, while the other was allowed to come into contact with the upper pole or zinc. Scarcely had they touched this last, when combustion took place in the most agreeable manner. A considerable smoke (which was the volatilized metal) could be instantly perceived, attended, at the same time, with the appearance of brilliant and beautiful sparks. Of these the most handsome may be obtained from iron: those from mercury are white as crystal.

If the opinion formerly entertained had been accurate, no combustion ought, in this instance, to have taken place; still we see a contrary result. Violent shocks should have been obtained; but we shall see that the reverse took place: for, having moistened my hands with pure water, I could scarcely perceive any electrical action. But, after having wet them with the solution of the muriate of ammonia, which I had used in the construction of my pile, the shock was very violent. Four or five persons who were present repeated the experiment with the same effect.

Having taken down my pile, I constructed another, using pure water instead of a solution of the muriate of ammonia. I now attempted to inflame some of my wires, but in vain: I then applied my hands, wet with water, to the two poles, and I found that the shock was the same as when the pile had been mounted with a solution of the muriate of ammonia, which had burnt and inflamed the metals; but after having dipped my hands into a solution of the muriate of soda, I immediately experienced very lively shocks, which may be rendered still more powerful by using the muriate of ammonia.

I presume that nearly the same effects will be produced upon the nervous and muscular systems, when penetrated by the elastic fluid.

It is in consequence of these principles, and of the information derived from experiments, that I shall endeavour to represent the superior advantages of Galvanic electricity as it may be had from Volta's pile, of which I dare advise every physician to become possessed, as an instrument essential to his profession, instead of the ordinary electrical machine, the inconveniences of which are very generally known.

A pile of from fifty to sixty strata, of the diameter of a dollar, will answer very well for fulfilling all the indications required in any case where electricity may be thought necessary. This pile may be rendered active by means of the muriate of soda, in which are to be dipped pieces of pasteboard, or of cloth, of the same diameter with the strata. The pile may then be placed in tin tubes, and thus kept always prepared, as has been already recommended by its author, Volta. In this way it may easily be transported to any place, either for restoring life to such as are supposed to be drowned, or to those who have had severe falls, or who are attacked with asphyxia. It is very well known that, under either of these circumstances, every appearance of death is often exhibited, when, in reality, there is only a suspension of the moving and sensitive powers, a difficult respiration, and a diminished circulation of the blood. Under these circumstances I know of no stimulus so well adapted to the restoration of these vital functions, now almost entirely annihilated, as that of Galvanic electricity. The ordinary electrical machines are not to be compared to this, since they are too complicated, of too difficult use, and require several persons to manage them, in order to derive that advantage which may be so easily obtained from the small pile of which I have been speaking. This, on the other hand, is extremely convenient—may be transported, with the greatest ease, to any distance—and derives a peculiar advantage from the permanence of the electric fluid, which it continually absorbs and transmits in every state of the atmosphere, whether humid or dry; a circumstance which cannot be too highly appreciated by the physician, since he can neither obtain nor hope for it from the ordinary electrical machines. The complication of the one, the simplicity of the other, its moderate price, all ought certainly to give it a decided preference, and to recommend it to the attention of every person who practises medicine. But it can only become an useful instrument in the hands of a skilful physician; otherwise it must soon share the same fate with that of so many other valuable discoveries, which have totally

fallen into disrepute in consequence of not having been managed by proper persons, or of not being directed by those who were acquainted with all the various branches relative to the healing art. I am fully persuaded that it is impossible to treat any disease properly, unless we are perfectly acquainted with the part affected, and its particular functions. Consequently, those who are unskilled in medicine will be constantly liable to apply it, not only in an absurd, but often in a dangerous manner to the patient who should have the weakness to commit himself to the care of an ignorant or presumptuous empiric.

Another claim to preference which Galvanic electricity has over the machine hitherto in use, consists in its manner of operating as a stimulant: its effects are more mild, more uniform, and, at the same time, more analogous to the animal stimulus. This probably happens from metals absorbing the Galvanic fluid with more facility, or independently of any motion: hence they transmit it with the same ease.

If it be demonstrated that metals may be volatilized by means of the pile, I feel no hesitation in asserting that they may be held in solution by the air, so as to form what Fourcroy terms a metallic atmosphere, which must necessarily have considerable influence upon those patients who have been subjected to the action of Galvanism or electricity. It is well known that Volta's pile furnishes oxygen to the positive, and hydrogen to the negative pole; that this oxygen produces oxydation or combustion; and that this combustion is more complete in proportion to the rapidity with which the water is decomposed. Independent, however, of these circumstances, a portion of the oxygen gives rise to a new agent, long since known to be an acid, and which I shall suppose to be of a phosphoric nature. The experiments of M. Mauduit and Brugnatelli prove that, by means of this acid, different electrats may be obtained, as various as the bases with which it is combined. Brugnatelli, having constructed his pile, says, that as many different electrats were obtained as there were different metallic conductors employed in his experiments. These electrats (the geometrical figure of which has not been yet determined) no longer partake of the same nature with the acid, and merit particular notice, as by their means some light may be thrown upon the peculiar properties of the electric fluid; an object which has long occupied my attention. With the hope that I may be able to add something to our knowledge of it, as well as become more particularly acquainted with these salts, I shall call

them the electrats of iron, of zinc, of antimony, of gold, of silver, &c. It is a very striking and remarkable circumstance that these different electrats appear to move, or to be transmitted from one metal to another by means of the Galvanic or electric current, aided by conductors. If this fact be sufficiently established, which, as I shall endeavour to prove, cannot be doubted, the importance of these salts in medicine must be obvious, since they may be immediately introduced into the system by the force of the electric fluid.

These observations, which I consider as meriting attention, must strongly operate in favour of the new ideas which I am endeavouring to explain. To these circumstances another fact may be added, in order to prove how far these principles are well founded. If, for instance, we rub upon the lips, or in the mouth, one of the Galvanic conductors, we shall directly perceive either a metallic odour or taste analogous to the particular species of metal which has been employed in the experiment, mixed with an acid acrimony, which appears to denote an excess of acid in the formation of the salt which results from it. It is evident that this transmission can only take place by means of the electric current, the action and velocity of which can scarcely be calculated; that it ought necessarily to produce effects more or less beneficial in all those different diseases which we wish to treat with any metal whatever, directed by the electric or Galvanic fluids.

Independent of what I have just noticed in favour of the electrats, and of a metallic atmosphere, (which, I trust, will not be called in question) I shall add another product, no less interesting, viz. the *metallic hydrurets*, obtained by the combustion or oxydation of metals, and by the decomposition of water, or of the different neutral salts or acids which may be used to excite combustion, and, consequently, electricity. Hydrogen gas has the singular property of dissolving metals, and of forming with them a *metallic atmosphere*, as has been proved by Fourcroy and Vauquelin. When saturated with zinc, iron, &c. it is heavier than hydrogen gas in its ordinary state, but lighter than atmospheric air, for this last easily displaces it, according to Bouillon La Grange, in the second volume of his Course of Practical Chemistry, art. Zinc. There can be no doubt, then, that this gas has the property of dissolving metals, and of forming with them an atmosphere of hydrurets, with which such patients as are subjected to the influence of Galvanism are continually surrounded. In order to point out the consequences which may reasonably be

expected from these electrats, hydrurets, and this metallic atmosphere, whether introduced into the system by an electrical current, or by respiration, I shall quote what has been written, by some of the most celebrated physicians, on the perspiration, the porosity of the human body, and the effects of inspiration. Lewenhoeck has observed that one grain of sand was capable of covering 250,000 pores, through which the matter of perspiration is transmitted. If this be true (and I believe that it is not doubted), what weight does it not add in favour of the principles which I am endeavouring to establish, particularly when we compare with it the electric fluid, the rapid effects of which we can scarcely trace even in imagination? Is it not well known that these pores afford a free passage to different odorous emanations much more dense than the electric fluid—such, for instance, as of mercury, of copper, of arsenic, &c.? The surface of the body of an ordinary sized man being supposed equal to fifteen square feet, will not contain, from what we have just seen, less than 2,160,000,000 of pores, through which the electric fluid, charged with different electrats, may penetrate to the depth of the various viscera and of the smallest organs, the effects of which must be more or less beneficial, provided it be properly applied.

These circumstances, if duly understood, and assented to, cannot fail to render Galvanism of daily use in the practice of physic, instead of the former electricity.

I shall now attempt to point out another advantage of Galvanic electricity, no less interesting than those already noticed: I allude to that of the *metallic hydrurets*, or a *respirable metallic atmosphere*. If what I have before mentioned and endeavoured to prove, be recollected, no person can be surprised that I should endeavour to render the respiration of this metallic gas an object of medical resource. It may be objected, that although the facts be granted, still the effects produced must be very imperceptible. This I myself at first believed: but when we reflect that inspiration is very frequent, that it takes place twenty times in a minute, twelve hundred times in an hour (the mean time which ought to be employed in Galvanizing a person), and that in each inspiration the lungs receive forty cubic inches of air, which are equal to 800 inches in a minute, 48,000 in an hour, and 1,500,000 of cubic inches in a day, we cannot doubt that the lungs are capable of containing an astonishing quantity of air, since their capacity, or the sum of the cavities of all the pulmonary vessels is

at least equal to 220 cubic inches, according to the experiments of Doctor Irvine; and the celebrated Hales has supposed that the internal surface of these viscera is nineteen times greater than that of the skin of the whole body, and, consequently, equal to 285 square feet, which contain 615 thousand, 600 millions of pores. These circumstances considered, I cannot but believe that we shall be less disposed to reject or condemn the new principles which I wish to introduce: for, however small may be the portion of metal conveyed to the lungs by each inspiration, it must always be considerable if continued during an hour.

In order to understand the full extent of the effects which must be produced, it ought to be remembered that, being introduced in a gaseous form, it must become infinitely more active in its operation. Whoever has been accustomed to experiments, particularly with the gases, will be fully able to understand the consequences which must result from it. Every person is acquainted with the risk which is incurred by breathing carbonic acid gas, or the oxygenated muriatic acid, both of which are fatal poisons; whereas, in their solid state, they may be preserved, respired, and kept in the mouth without the smallest danger. The carbonic acid even becomes in liquors so agreeable, that every body looks for it in Champaigne wine, in beer, in cyder, and in all other fermented liquors; but it excites an equally universal dread in its gaseous state. Hence we may be allowed to suppose that the metallic hydrurets, formed of various metals, and introduced into the circulation by means of the lungs, cannot but prove advantageous in a variety of diseases.

They may easily be obtained, of any nature that we wish, by having piles constructed with the particular metal which we intend to administer. It is necessary, however, to observe, that the conductors ought to be analogous to, or of the same nature with the metals which are used for forming the pile. The same remark also equally applies to the electrats.

What may we not expect from this new method of administering electricity, when even this fluid, in its simple state, has succeeded in effecting cures, where every other remedy has been tried in vain! Certainly this ought to be much more effectual in every case where the use of metals shall be indicated, and we may predict from it the most happy effects, provided our theory and principles be confirmed by experience. So fully persuaded was I that metals were capable of forming metallic atmospheres, that, when consulted by the members

of the Galvanic Institution in this city, I strongly opposed the construction of their pile with copper, according to the method which has been so generally practised in Europe, since the origin of this beautiful discovery, from a conviction that it might prove injurious to those who were Galvanized, in consequence of their inspiring small particles of this deleterious and poisonous metal, with which the surrounding atmosphere would be continually saturated, as evinced both by the organs of taste and of smell; for it is sufficient, says Fourcroy, that it be rubbed, even for a moment, upon the skin, which no sooner touches it than it imbibes its peculiar odour. This tenacity and communication of odour, by the slightest contact with the skin, proves that copper seizes upon and readily attaches itself to this organ, and that the surrounding air is continually dissolving small portions of it, which are afterwards applied, in a state of vapour, to the nostrils and olfactory nerves: hence it is disgusting to every animal who, from instinct alone, is admonished of the danger attending it. If what I have just quoted from Fourcroy be true, what are we to think of the effects of electricity and of hydrogen gas upon this metal. If atmospheric air is capable of dissolving it, what will not these two agents do, which act so much more powerfully upon metals? I conceive, then, that I was perfectly justifiable in excluding copper from the Galvanic pile, particularly as I was persuaded that any other metal would answer as well. In this respect my opinion has been confirmed by experience. The pile constructed by these gentlemen consisted of zinc and tin, and the Galvanic phenomena produced were very nearly the same.

I shall now mention several other circumstances which tend to confirm the idea I have long since entertained as to the existence of a metallic atmosphere. M. Fourcroy (whom I must again quote as one of the best authorities upon the subject) has the following passage in his *Systeme des Connoissances Chimiques*, vol. v. p. 23, which, for the satisfaction of readers in general, I shall translate. "It must be remarked, with respect to this odour, that the metals which possess it appear to be surrounded by an atmosphere which contains, in reality, a saturated solution of their particles, a portion of which being carried off by the air, is applied to the surfaces of all bodies, and, consequently, to the very sensible membrane of the nostrils, whence the perception of this sensation is excited. It is likewise in this metallic atmosphere which surrounds even

those metals considered as destitute of smell, that magnetical,* electrical, Galvanic, and, perhaps, a variety of other phenomena more evidently chemical, are carried on, and which appear to be, with respect to the ordinary operations of chemistry, what those microscopic animals, with which naturalists seem to have composed a new world since the discovery and perfection of the microscope, are to those beings which fall under the cognizance of our senses."

I shall mention another fact, which cannot but add new force to a belief in the existence of a metallic atmosphere, and which, at the same time, points out what we may expect from the influence of *electrats* and *metallic hydrurets*. Dr. Stringham, Professor of Chemistry in the College of New-York, related to me an anecdote which he had from an apothecary of his acquaintance, who having distilled a considerable quantity of mercury, with the view of purifying it, formed, without doubt, a metallic or mercurial atmosphere in the apartment where the operation was conducted; since his wife, who was present during the greater part of the process, was afterwards attacked with salivation, and a variety of other symptoms, which were evidently in consequence of the action of mercury upon her system.

This phenomenon cannot appear either strange or surprising, when we consider that mercury is very easily oxydated, even by simple agitation in the open air. The Abbè Bertholon (to whom I am indebted for many useful observations) says, in his Treatise upon the Electricity of the Human Body, that Beccaria having volatilized mercury by means of the electric spark, Gardini applied it to scrophulous tumours, by an amalgam composed of lead and mercury: to this he directed the electric fluid by means of a conductor, which drew along with it into the tumours particles of volatilized mercury, which, by this process, were rendered much more active, more efficacious, more powerfully discutient, and, in every respect, much better adapted to the removal of this species of tumour. I have no doubt that venereal patients might often be cured by means of the mercurial electrats, without the necessity of using any other preparation of this metal. In the Medical and Physical Journal, vol. vi. p. 277, we find related two very remarkable

* It appears from the experiments of Mr. Coulomb, which have been repeated before the National Institute in France, that every body in nature is influenced by the power of magnetic action. This would induce us to believe that the opinions of Mesmer and of Perkins were to a certain degree correct.

cases of inveterate gonorrhœa, one of which was removed by a violent stroke of lightning, the other by an electrical shock, directed, by means of a conductor, along an iron wire, one extremity of which was inserted into the urethra. This would lead us to suppose that iron, thus volatilized and applied by the electric fluid, might prove beneficial in every case where it can with propriety be recommended.

I cannot finish this memoir without venturing to offer one conjecture as to the nature and irritability of the nerves and muscles, some idea of which I think I have acquired during the prosecution of my experiments. Many physiologists suppose that the motion and irritability of the muscles and nerves are owing to a fluid which they have denominated *nervous;* while others again attribute them to the effects of magnetism, of electricity, and of Galvanism. Whatever confidence may be placed in these opinions, they are certainly too vague and unsatisfactory to suspend the researches of one who is zealously devoted to the acquisition of knowledge. I believe it may be admitted as a principle, that the sensibility of the nerves, as well as muscular motion, are intimately connected with electricity, which we know to be generally diffused throughout every body in nature; that the different species of sensibility are only to be attributed to the sudden passage of this agent through the various saline fluids which serve as conductors to it, and in which the muscles and nerves are continually immersed; and that such of the muscles and nerves as are only surrounded by water will find electricity much more mild in its effects than if they were in contact with a solution of the muriate of soda, of the phosphate of soda, of the muriate of ammonia or of magnesia, of which the urine, the matter of perspiration, &c. are generally composed. If we wish to be convinced of this fact, we may easily satisfy ourselves from analogy. This may be done by constructing a pile in the manner I have already mentioned, and afterwards touching its two extremities, first with the hands wet with pure water, then with the different saline solutions. We shall find that the shocks will be proportionate to the nature and quality of the salt, and not to the electricity alone. All the experiments which have been made unite in proving that pure water produces the most mild and uniform shocks; that the oxydation or combustion of metals is by no means the cause of the violence of the shocks; for a pile constructed simply with water will produce the same electrical phenomena, although it will neither burn or inflame. Hence we may conclude that irrita-

bility and motion are not to be attributed either to magnetism, to electricity, or to Galvanism alone, and that the only difference between the various degrees of electricity is owing to the different chemical agents by which the muscles and nerves are continually surrounded; that sensation only takes place at the moment when the electric fluid passes through those different saline solutions which serve as its conductors; consequently, that the existence of a particular *nervous fluid*, such as is generally understood by physiologists, cannot be admitted; and, lastly, that the effects of electricity would be always extremely mild (as it is uniform in its operation), were it never transmitted by any other conductor than pure water.

ARTICLE III.

ADDITIONAL EVIDENCE *in support of* "*the* UTILITY *of occasional* BLOOD-LETTING *in the* PREGNANT STATE *of* DISEASE." *By Dr.* VAUGHAN, *of Wilmington, (Del.) in a Letter to Dr.* MITCHILL, *dated Dec.* 2, 1803. [See Hex. I. vol. vi. p. 31, 150.]

CASE I.

MRS. A——, in the last month of her first pregnancy, was attacked with violent pain of the head, confusion of the intellect, and a sensation of general uneasiness. Being absent, another practitioner was called in, who bled her, and obtained relief. In forty-eight hours the same symptoms recurred, with labouring pulse, anxiety of the præcordia, and convulsive agitations of the muscles of the face. I then drew ten ounces of blood, which procured a second respite, and raised her pulse to a free and flowing state. However, in a few hours she was again attacked in a still more formidable manner, and soon became universally convulsed. Opportunely meeting, at this juncture, with the gentleman who first attended in the case, we decided on a third blood-letting, and agreed to be governed exclusively by the state of the pulse, without regard to the quantity of blood drawn. A vein was opened, and feeling the pulses of the wrists respectively, we closed our eyes on the bason, until the pulse, from being violently throbbing and irregular, became soft and slow; and she aroused up, and expressed a sense of relief. Twenty ounces were drawn at this time, and our patient shortly after fell into

a comfortable sleep of eight hours duration. In a few days there were some indications of returning convulsions, but the loss of ten ounces more blood effectually relieved her. At the expiration of her term she was safely delivered of a healthy child, and is now a nursing mother.

From the effects of blood-letting in this case, there can be no doubt but that the preventive mean of occasional blood-letting would have obviated the dangerous condition from which she so narrowly escaped with her life. Convulsions are at all times distressing and hazardous in the pregnant state, and especially when they approach the period of parturition. The loss of the child is almost inevitable, and the life of the mother imminently endangered.

CASE II.

Mrs. M——, in the eighth month of her fourth pregnancy, was attacked with a supposed hysterical fit; and as she remained insensible some hours, a few ounces of blood were drawn, and the left side appearing to be paralytic, a blister was applied to the nape of the neck, a second one to the left arm, and assafœtida was freely exhibited. When called, on the tenth day from the attack, I found her in fixed hemiplegia; the saliva dribbling from the left side of her mouth—her speech so inarticulate as to be understood only by her attendants—and her pulse small, soft, and frequent—no less than 120 strokes in a minute. The latter circumstance embarrassed me; but as she complained of a constant pain and confusion of the head, with unconquerable watchfulness, I suspected the state of her pulse to be owing to a chronic state of action in the arterial system generally, while the vessels of the brain were in the reverse state of suffocated excitement. Stimulants were doubtful and hazardous, and a cautious course of blood-letting was decided on as the more safe method of restoring the action of the vascular system, by gradually diffusing concentrated excitement from the brain.

On drawing four ounces of blood the pulse faultered, but in a few minutes became regular, at 100 strokes a minute. This change encouraged me; and as she lived eight miles from town, I directed four ounces more to be drawn that evening, and repeated every twenty-four hours. In three days I found her sitting up. She could speak more intelligibly, and raise the paralytic arm to her head. Pulse considerably restored, and head much relieved. The blood-letting was repeated daily for seven days, and afterwards once a week, until she could ride

out; and, at the expected period of parturition, I had the pleasure of seeing her delivered of a healthy child. Her recovery from the puerperal state, also, was nearly as speedy as at former times, to the no small disappointment of several kind old ladies, who seriously pronounced her a victim "to my extravagant prejudice for blood-letting." Such disappointments, however, are the best reward for the many anxieties and embarrassments we are subjected to, by the mixed forms of disease, and prejudice in others.

CASE III.

A lady, in the ninth month of her second pregnancy, was attacked with pain and giddiness of the head, dimness of the right eye, and the extremities of the same side were soon disabled. The muscles of the cheek were torpid; the mouth drawn to the left side, and the saliva dribbling out involuntarily; and her pulse small, hard and frequent. Three small bleedings relieved her, and in a few days I delivered her of a healthy child.

Having attended this lady in her previous lying-in, I am persuaded that the several blood-lettings immediately preceding the last term of parturition had a most happy effect in lessening the pangs of child-birth.

ARTICLE IV.

ILLUSTRATIONS *of the* SPOILING *of* BEEF, PORK, *and* BUTTER, *when cured with* LIVERPOOL SALT; *and of the Fevers excited thereby, as those corrupting Articles act directly upon the Stomach and Intestines, and through the Medium of the Atmosphere upon other Parts of the Body, in private Houses, in Ships, and in Cities. In a Letter from Dr.* MITCHILL *to* CHARLES CALDWELL, *M. D. &c. dated Washington, Oct.* 22, 1803. *(See page* 83 *for other Facts on Sea-Salt, and for a View of the Trade of the United States with Foreign Parts in that Commodity.)*

IN the course of trade between America and Great-Britain, it has become the misfortune of the United States to be visited with frequent cargoes of salt from Liverpool. This article is prepared on the western coast of England, where coal for fuel can be bought at a low price, by boiling ocean-water or briny spring-water, saturated with the rock-salt of

Northwich, in large and shallow pans of iron. The native mineral salt of Cheshire is carried coastwise to Lancashire for that purpose. The salt which remains after the water has been evaporated by force of fire is called *pan-salt*, and is a medley of saline substances. It is very different in its qualities from the pure muriate of soda: for whereas that is the most agreeable of the antiseptics, and ranks among the strongest; this mixture of impurity and trash is remarkable for possessing the reverse of those valuable properties. Indeed, this *artificial* salt is exceedingly unlike the salt formed by the evaporation and crystallization which sea-water *naturally* undergoes in the warmer latitudes. There is a remarkable difference between that vile and heterogeneous mass sold in the American ports under the name of *blown salt*, or *Liverpool salt*, and the efficacious and excellent article brought from the Canaries, Cape de Verd and Bahama Islands.

The frequent and intimate connection between the American ports of New-York, Philadelphia, Baltimore, &c. and the city of Liverpool, has rendered it very convenient, in the course of commerce and navigation, to throw in salt at the latter place for ballast, or part of a cargo, to the American market. The cheapness of fuel from the neighbouring coal-mines in Lancashire enables the salt-boilers to sell their manufacture cheap; and hence it happens that ships about to come to America, either empty or with a light freight, find it worth their while, as they must have ballast, to buy salt for the purpose instead of stones, sand, iron, or the like. If the salt clears itself, after paying prime cost and duties, it will answer as well as other ballast. If it does more than this, it is preferable.

From this concurrence of events it has happened that the sea-ports of the United States have been largely supplied with British home-made salt from Liverpool. Almost two-fifths of all the foreign salt consumed in the United States comes from this part of England. And a material more pernicious in its consequences could hardly be introduced among our people. The importation still continues, and the time is come to apprise and warn them of the evil. It is highly to be wished that never a bushel more of that mischievous commodity should be consumed in America. The trade in it ought to be broken up. If the consumers of salt were aware of the bad quality of that from Liverpool, there would be little probability of their continuing to use it, or of purchasing a bushel more.

Liverpool salt is very imposing to the eye. It is in a fine powdery form, of a tempting colour, and possesses all the exterior qualities which allure purchasers, and invite a ready sale. The manufacturers possess, in an uncommon degree, the art of preparing their ware most handsomely for market.

It has accordingly been bought with avidity by the American merchants and traders, and transported to many interior parts of the United States. The snowy whiteness of the material itself, its ready solubility in water, and the mildness of the pickle which it forms, had brought Liverpool salt into general use for preserving the beef, pork and butter of the Middle and Southern States.

The loss of property and of life consequent upon the employment of this kind of salt is prodigious. Experience, year after year, has proved it to be incapable of preserving our beef from corruption. Often has this important article of food been found to be tainted the very autumn in which it has been packed in barrels. More frequently has the beef stunk abominably in the magazines and ware-houses of New-York and other cities, on the return of warm weather the ensuing spring. And a more common and lamentable case is, that in the progress of summer's heat, aided by a southern latitude, the beef, when exported to the West-Indies or elsewhere, degenerates with a still more rapid process of putrefaction.

The inspectors who re-pack our beef, the merchants who own it, and the masters of vessels who carry it abroad, are all of them witnesses of these facts.

But the waste and destruction of property are not the worst consequences of trusting the preservation of beef to Liverpool salt. The exhalations from such masses of animal flesh, as they undergo corruption and turn to rottenness, are remarkably noxious. They poison the surrounding air by their deleterious presence. They have sickened and destroyed repeatedly, in New-York, the inhabitants who were unfortunate enough to be in the neighbourhood of such nuisances, and enveloped in their unwholesome atmosphere. Pestilence and desolation have prevailed in the vicinity of these putrefying remains of oxen, bulls and cows.

The misery endured by cities is also incidental to ships. Within the sides, and under the hatches of a vessel, septic vapours are copiously engendered and most highly concentrated. Existing there in their greatest virulence, they excite fevers of the most fatal forms that afflict the human race. And thus, from the nature of their cargoes, can it be under-

stood wherefore vessels that carry beef, &c. to the West-Indies are commonly sickly, and by the time they get back, are in an odious and intolerable state of uncleanness. Too pestilential, from the venom engendered within them, to be admitted to port, they are proper subjects of ALKALINE PURIFICATION, by which alone can they be rendered sweet, safe and wholesome.

Thus, besides the sacrifice of property, we find that the employment of Liverpool salt, in the pickling of beef, leaves it liable to corrupt; and the consequences of this corruption are pestilential exhalations stirring up yellow fevers and other malignant distempers in the neighbourhoods, cities and vessels where the bodies of these herds of slaughtered neat cattle happen to be deposited. Indeed, the mischiefs accruing to housekeeping, to city police, and to navigation, from this source, almost exceed enumeration.

There is another evil, however, which ought to be mentioned; that is, the disorders of the stomach and intestines induced by eating semi-septic beef and pork. It is well known to each master of an house, as well as to every master of a ship, that sometimes their salted provisions become tainted or partially spoiled. The expediency or necessity of the case obliges the family or crew to subsist upon this unsound and unhealthy food. Dysenteries, fluxes, scurvies, and similar ailments, are the natural incidents to this kind of diet. Sometimes, among the customers of a country store-keeper, the extent of the sales of his British salt can be traced in the region around, by the offensive and disgusting condition of their meat-tubs, and the prevalence of bloody-fluxes, and other intestinal disorders, in those who draw their sustenance thence.

And yet people go on to buy and consume it, as if the preservation of their meat and of their health was a matter of no moment whatever. Surely the consumers of salt ought to be upon their guard against such impositions. They ought not to purchase, or in any wise to use Liverpool salt. Then the country traders would not carry it from the sea-ports: nor then would the merchants import it, or receive it on consignment from the land of its manufacture; a land whose inhabitants being too wise to use it themselves for putting up beef and pork for long keeping or exportation, or to employ it in the provisions either of their navy or army, send it away, as fast as they can export it, to be consumed by the people of the United States. It is not made to preserve meat, but to sell.

The loss of property, health and life, which results from

the vitiated and corrupt state of our *beef*, whether consumed at home, or exported to foreign parts, is likewise consequent upon the use of Liverpool salt, or other British boiled salt, to pickle our *pork*. But as pork, from its nature, is less prone to corrupt and emit venomous gases than beef is, and is brought in smaller quantity to market, there is proportionally less damage sustained from its putrefaction, and less injury by its exhalation. But pork as well as beef suffers all that it can suffer in deterioration from the weak and adulterated material wherewith it is salted. And thus the vessels in the West-India trade grow foul and sickly. Their crews contract yellow fevers from the causes existing within themselves. And then the blame is cast upon foreign dominions.

The butter of the New-York market has also been rendered worse, if not absolutely spoiled, by the same kind of salt. Beguiled by its fine and showy exterior, the citizens have used it extensively in our counties famous for grazing and dairies. In many cases it has supplanted the old-fashioned coarse or sun-made salt. Wherever this substitution has been made, it has been with a pernicious effect. The butter so salted does not keep so well, loses its agreeable flavour, and acquires rather a disagreeable scent. It is less prized by those who are nice in selecting this important article of house-keeping, and it consequently brings a lower price to the person who makes it. Thus agricultural industry is deprived of a part of its reward. And this will probably continue until the butter-makers discontinue altogether this very unfit and unsafe material. The difference between butter put up with this salt, and with natural crystallized salt, is so great that our wholesale and retail grocers can distinguish it at once by the smell, on piercing or opening a firkin. The sweet flavour and nice odour which pure sea-salt gives, is altogether wanting in that which is seasoned with the other.

And thus, as Liverpool salt is the remote agent of so much loss, damage and misery in the United States, it is high time to cease both to buy and consume it. In its stead, salt from the Bay of Biscay, Portugal, Isle of May, or the Bahamas, may be employed with perfect safety. The preferableness of these will be discovered by a little experience: and further observation and trial will determine which is the best among them for particular uses.

Having thus far detailed the matters of fact, I must recite a few more things of the same kind before this examination is closed. The British philosophers have long known the dispo-

sition of *their* salt to promote putrefaction. It has even been published to the world half a century ago. In *their own* country their experiments and monitions have had the desired effect. They have warned their own people not to trust it for any other than culinary and extemporaneous use. The experiments of Sir John Pringle were decisive on this point. They have been confirmed since by Dr. Percival, an inhabitant of Manchester, in his experiments upon *their* common salt (carried, of course, directly from the shores of the Mersey, or from Liverpool), which, in small quantities, does not prevent the corruption of animal flesh, but, on the other hand, promotes it. (Percival's Essays, vol. i. p. 346.) And these facts no one has pretended to dispute.

And yet, after all the experiments, plain and instructive as they are, made at home, and all the facts, cogent and conclusive as they are, abroad, the citizens of the United States are to this day purchasing and consuming this baleful article of commerce; while, if they judged rightly, they would reject it in all their dealings.

Dr. Percival has preserved an anecdote on this subject which is worthy of being known more generally. He says that *Sir J. Pringle told him he had long believed the septic quality of sea-salt, as employed in his experiments, was owing to "some heterogeneous substance blended with the article," and not to any putrescent quality in the mere muriate of soda, or pure sea-salt itself.* Doubtless the noble baronet was right; and Dr. Percival has borne ample testimony to the truth of his opinion.

The fault of Liverpool salt, and of all other salt obtained from sea-water by force of fire, or by boiling, is its admixture with foreign ingredients, known by the technical names of *slack* and *bittern*. These usually adhere to the salt in considerable quantities. They have no antiseptic virtues, but possess a directly contrary effect. Hence their bad quality, and the bad quality of salt impregnated by them, can be readily accounted for. Sea-salt, formed by *natural* evaporation and crystallization, has very little admixture with these foul and foreign ingredients. It is therefore more pure, more antiseptic, and more fit for all manner of economical purposes.

To preserve animal flesh in the most perfect manner for the food of man, in private families, in armies, in navies, and in foreign parts to which these sorts of provisions are exported, the salt, if not pure originally, ought to undergo a PROCESS OF PURIFICATION. The best mode of doing this, and an

excellent chapter on the economy of salt, may be seen in "Bordley's Notes on Husbandry and Rural Affairs," to which I beg leave to refer you for a variety of important and valuable information on this subject. (See the review of this instructive work in Med. Rep. Hexade I. vol. iii. p. 276.)

Knowing well your correctness of thinking and acting on the great question of our pestilential distempers, I have no doubt of your support, when I entreat you to assist me in putting our fellow citizens on their guard against the extensive and fatal evil of employing English salt to preserve any kind of flesh or fish from putrefaction. The manner in which *pure* muriate of soda acts in staying corruption, I formerly explained, in a paper addressed to Professor Woodhouse (Med. Rep. Hex. I. vol. ii. p. 274); but this Liverpool salt is so *impure* that it does not quadrate with that theory, but stands in opposition to it; and by its diversity, indeed, confirms it. In discussing a subject so complicated and abstruse as that of our annual endemics, it is not a matter of surprise that they who have little industry and small capacities should fall into the belief of their being contagious, and of foreign derivation. Some of them will carry this error with them to their graves; but the majority, especially of the rising race, will take the right impressions without any difficulty, and continue to reason and to conduct properly all their days.

ARTICLE V.

OBSERVATIONS *on the* CONTAGIOUSNESS *and* IMPORTATION *of* YELLOW FEVER. *By* THOMAS DANCER, *M. D. of Kingston, in the Island of Jamaica. Addressed to the Editors of the Medical Repository.*

INDEBTED as I feel myself to the Medical Repository for much valuable information, I should be glad to evince my gratitude by contributing to so useful a publication. As I am impelled by the same motives that appear to actuate the ingenious writers in this miscellany, viz. the discovery of truth and the improvement of medicine, not by any desire for literary contention, I shall hazard some observations on a point which, being one of the greatest interest to humanity, has chiefly engaged the attention of the American faculty, and called forth their talents into exercise, viz. *the contagiousness or non-contagiousness of Yellow Fever, and whether the Yel-*

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low Fever is an imported disease, or one wholly of local and domestic origin.

It is greatly to be lamented that a due reverence for long established doctrines on the one hand, and a laudable ardour for discovery on the other, should alike tend to mislead us in our researches; and that the investigation of truth, in a matter of the greatest concernment to mankind—one on which the very existence of society in a great measure depends, should become an undertaking of almost insuperable difficulty. How else could it happen that so many medical men, distinguished for talents, and no less so for a spirit of liberal and candid inquiry, should differ so widely from each other, and, at a short distance of time, from themselves; many of them having been led to change their opinion on the subject (as it is possible I may ultimately mine); which serves to show that, however simple and plain the question may seem, it is nevertheless involved in much intricacy. I will not presume that I can say much to elucidate it, or that I am competent "to set it in the best light it is capable of receiving, in order that the question may be brought to a fair and ultimate decision;"* but I shall obey the invitation given me of presenting my sentiments, if haply they may serve to bring such medical men as are disposed to consider the subject without prejudice, and apart from all other matters with which it is supposed† to be connected, to a somewhat nearer point of agreement.

When "facts are more scrutinized, the advocates for either opinion will possibly find a ground of compromise."‡ This is an event devoutly to be wished: for such differences among medical men are not creditable to the profession, nor conducive to the benefit of mankind.

A science like medicine will not always admit of definite language. This is apparent on many occasions, and is particularly so in respect to the terms *infection* and *contagion;* from the confounding of which together, or from assigning to each novel significations, proceeds, in a great measure, the obscurity that rests on the present question. Their etymological import, so critically ascertained in some late inaugural disserta-

* Med. Rep. Hex. I. vol. vi.

† Some appear very unwilling to admit of the supposition of contagion, because of the consequences that might follow: but if contagion really does exist, are not the consequences of incredulity much more to be apprehended? I do not mean to defend the old quarantine regulations: they are absurd.

‡ Dr. Seaman.

tions,* is of little moment. It is the sense in which they are ordinarily understood,† by which we must be guided in this inquiry; and if we are to adhere to this, the *pestilential yellow fever*‡ must be considered a *contagious* one.

Such diseases as the camp, hospital and jail fever, with ordinary typhus, which derive, or have been supposed to derive, their origin, not from marsh exhalations, &c. but from human effluvia, or emanations proceeding directly from the sick body, or else from substances imbued with these, have always hitherto, at least since the time of Sir John Pringle, been denominated *contagious*,§ in contradistinction to those arising as afore-mentioned, which it has been agreed to call *infectious*.‖ That the pestilential yellow fever classes with the former, and not with the latter, there can be no manner of doubt; but if we are to adopt the new-coined distinction between infectious and contagious diseases, viz. that contagious diseases are only such as are occasioned "by morbid animal secretion, or by the vitiated product of living vascular action, like small-pox, vaccina, measles, lues venerea, &c. and which can affect the constitution only once,"¶ then the dispute is at an end. We may, however, be allowed to ask, Is this novel distinction so obvious as to be understood,** and so satisfactory as to be ad-

* Inaugural Dissertation on Dysentery, by Dr. Quackenbos. Inaugural Dissertation on the Origin and Propagation of Yellow Fever, by Dr. Bayley. New-York. 1802.

† Contagion is that peculiar morbid poison which is prepared in the bodies of living animals, and which is communicated to others by contact, or by approaching too near them. Such was the acceptance of the word while it remained unwarped by prejudice, and till restricted to such diseases as occur only once, like small-pox and measles. (Med. Rep. Hex. I. vol. vi. p. 12.)

‡ A distinction is to be made between the endemial yellow fever and the pestilential yellow fever. (See Chisholm.)

§ "It is now generally allowed that the effluvia of living persons, confined in close situations, produce the poison of fever." (Ferriar.)

‖ Cullen, Pringle, Lind, Chisholm.

¶ See Med. Rep. Hex. I. vol. v. p. 186. vol. vi. p. 10. The former part of this definition may, perhaps, be admitted, but not the latter.

** I cannot help thinking that the lately adopted distinction between infection and contagion is ambiguous and inapplicable. Who can say with certainty that contagion belongs only to *secreted* matters, and that it is not attached to the matter of perspiration, and the halitus from the lungs, and other *excretions?* The advocates for the new distinction are not at all agreed how to class diseases under it. By some, *lues venerea* (as depending on specific virus secreted) is considerd a contagious disease. Happy would it be for mankind that it answered the definition, and that it occurred but once to the same person. (See Med. Rep.)

Rather than allow yellow fever to be contagious, like hospital fever, jail

mitted? I presume otherwise. Do none of the diseases depending on a specific secreted virus affect the constitution only once? Does it appear that there is no difference between vegetable and animal putrefaction? Can the emanations from the *living* body be considered of the same nature with those from dead animal matter?* May not the effluvia of the human body, under disease, be considered as having a different nature from what they have in health? and may they not, under many diseases, be *specifically* so?

We are confessedly alike ignorant with respect to the matter of infection and contagion;† but is there any just ground to conclude (although they should sometimes, as it is by many imagined, co-operate) they are the same, and that all fevers arise solely from one cause; or that typhus, jail, hospital, ship, and pestilential yellow fever, all originate in the same source as bilious remittent and intermittent fevers? If this were the case, *why should not the phenomena of each be the same?* But we see they are not so. There is an essential difference among them. They do not exist in the same seasons and situations, nor do they run the same course, &c.

It is become fashionable to consider the several kinds of fever as *grades* only of the same disease, and to talk of the different *states* of fevers, viz. the *gangrenous* state, &c. But fevers originate in so many different ways—they differ so much in their mode of attack, in their progress, declension and termination, that I must continue to think they differ in *genera* according to the remote cause. "The remote causes of fevers are of two kinds, each producing a class of fevers, whose cha-

fever, &c. it is by others confidently denied that these are so, and the fact, so well established, of prisoners having communicated to the judges and court at Oxford, &c. a disease they had not themselves, is indecently ridiculed. On the other hand, Dr. Cathrall, (a champion for the new distinction) allows that typhus, hospital fever, &c. do not depend on a putrefactive process, but on a *vitiated secretion:* if so, why may not the pestilential yellow fever depend on the same?

* See Ferriar, Med. Hist. vol. i.

† It is, indeed, pretended that the one consists of *hydrogen gas*, or hydro-carbonate, and the other of the *gaseous oxyd of septon*. I am fully sensible of the importance of the new discoveries in chemistry, but I do not see that they are applicable to explain the composition of pestilential effluvia. As well may we attempt to explain the nature of any specific contagion, viz. that of small-pox, lues venerea, and the poisonous odors. Are not all these combinations of oxygen, hydrogen, and azote? but who can say in what proportions, or explain the *quomodo* of their combination? —For the fallacy of eudiometrical experiments, see Dr. Rush, Med. Rep. Hex. I. vol. vi. p. 163.

racter depends on the nature of the peculiar fluid constituting the base of the morbific effluvia."*

Upon what does this difference among fevers depend? Certainly upon the remote cause producing them,† which cannot be always putrefaction simply considered, for it does not appear that infection (contagion) always arises from putrefaction,‡ and it is known to spread without its aid.

It would appear, then, that there is some material or essential difference between animal contagion and ordinary putrid exhalations, although it has been supposed there is some "intimate if not inseparable connection between them."§ There may be, perhaps, no such connection, or no effect arising from their chemical union; but they may reciprocally dispose the body to be acted on by each other. This would appear very evident from numerous acknowledged facts. Whichever opinion is admitted, it will serve, in some degree, to remove the ambiguity attending this difficult subject.

That the noxious effluvia and halitus from sick bodies may adhere to clothes, bedding, furniture, &c. and thereby become a seminium or fomes of the disease,‖ will scarcely be denied by any one; and the advocates for non-contagion will not pretend that it cannot be *so* imported, or that the *cause* of it cannot be so imported;¶ but then they affirm it cannot by

* Chisholm, vol. i. p. 281.

† Ibid.

‡ Persons concerned in putrefactive processes, and living in the neighbourhood of shambles, church-yards, &c. are not peculiarly liable to fevers. Infection or contagion is rarely, if ever, received from bodies who died of contagious diseases; not even from dissecting them, unless by inoculation. (See Ferriar, Med. Hist. and Facts, vol. i.)

"It must not, however, be concealed, that noxious effluvia do frequently arise from putrefying bodies in a *certain state* (perhaps from confinement); but the diseases produced thereby are inflammatory, not pestilential." (See as above.)

§ It appears, from the testimony of many medical writers who have had great opportunities for observation, that they frequently act in conjunction, and that fevers are combined. Of this opinion are Chisholm, Lempriere, Jackson, Lind, Clark, &c.—*Putrid effluvia, generated on board of ship, may have the effect of charging the type and nature of the original fever, by superseding the action of the marsh miasmata.*

‖ With what force the contagious matter generating fever will adhere to furniture, and the walls and floors of rooms, may be seen in many extraordinary cases, particularly in one related by Dr. Brocklesby, in his Diseases of the Army. Six or seven persons died in succession of a malignant fever, being put into an infected room, notwithstanding every pains was taken to purify it, each time it was vacant, by fumigation, ablution, &c. At last the walls were new plastered, and the floor planed, and it then became safe. Was this contagion common putrid matter?

¶ See Inaugural Dissertation by Mr. Quackenbos.

such means be communicated, and become epidemical. Is not this an assertion without proof?* Besides, it would be very extraordinary that a disease should not be communicable through the same means by which it was received.

It appears to me, therefore, however sufficient local causes† may be to generate a fever of this kind, that all the arguments which have been so industriously collected, and so strenuously urged against the contagious nature of it, are far from being conclusive. Like jail fever, &c. being once generated, it is susceptible of being propagated in the same manner, viz. by effluvia from sick bodies, and from these adhering to clothes, &c. and it is not impossible or improbable that "the spark which first kindled up the epidemic in many places might have been imported."‡

Having thus stated, as briefly and explicitly as possible, my sentiments on the subject, I shall conclude by making reference to the facts and circumstances on which my opinion is founded.

In the first place I must refer to the facts stated by Dr. Chisholm, which, notwithstanding their being called in question, have not yet been invalidated, and remain, in my judgment, unanswerable.

2dly. Although Dr. Chisholm has been represented as being almost the only advocate for contagion in the West-Indies, the contrary of this is the truth. Most of the practitioners in the West-Indies concur with him, and various facts and cases have been brought in proof of what he has stated.

* There are various instances quoted of the disease having been imported from the West-Indies in the clothes of those deceased. (See Lining, Rush, &c.)

† It is the opinion of many, that putrid effluvia may of themselves, in persons highly predisposed, generate the disease, and that from them it may be communicated, and become epidemic. (Med. Rep. Hex. I. vol. i. p. 321. See also Chisholm.)

‡ Seaman.

Some persons, rather than allow of the existence and operation of contagion in any case whatever, refer epidemical diseases, 1st, to an unknown constitution of the air; 2dly, to a decomposition of the atmosphere by caloric—to the aspect and conjunction of the heavenly bodies—to earthquakes, volcanoes, &c. and, lastly, to the particular curse of God. If any such there are who still delight in mysteries, and in explaining things in the most far-fetched and improbable manner, let them talk of occult qualities, and let them believe, with Dr. Moseley, that carbuncles and buboes in the plague are owing to the gross food of the Turks. Is it not to be regretted that men really respectable for their talents should indulge in such whimsies; and, while arraigning others for their credulity, should exhibit such melancholy proofs of it in themselves, betraying a weakness bordering on puerility or dotage!

Many similar instances of the contagious nature of yellow fever are related in the Medical Repository, which ought to have at least as much weight on the one hand as any stated to the contrary should have on the other.*

It is well known to the practitioners of this island, that the pestilential yellow fever prevails only on certain occasions—that it generally begins among seamen and soldiers lately arrived from Europe—that it has no apparent connection with local causes—that is to say, it makes its appearance during the most healthy seasons, and in the healthiest situations; while, on the other hand, it is never found to prevail in unhealthy or marshy spots.

Lastly, it appears, contrary to what has been again and again asserted, to be directly communicable from one person to another, and from a single person to many. For example, one man only, going on board an infected ship, and contracting the disease, shall communicate it to several others, who never had been otherwise exposed to the infection.† Many histories in proof of this might be adduced,‡ but I deem the following letter from my friend Mr. D. Brown, assistant surgeon to the 6th battalion of the 60th regiment, quartered at Up-Park Camp, to be more than sufficient.

* See Med. Rep. Hex. I. vol. vi. p. 160.

Dr. Rush has mentioned a fact which he justly terms a very important one, viz. that if a person who had taken the yellow fever in town went to a family residing in a healthy inland situation, he did not communicate the fever; but, on the contrary, if he went to a family residing near the river, that is to say, in a swampy or unhealthy situation, the family caught not a *bilious remittent*, but the *yellow fever*. This might be deemed proof sufficient of the contagious nature of yellow fever. But Dr. Rush will not allow it. He says that the *exhalations* from persons in yellow fever act on others as a *stimulus*. This is what the contagionists will not cavil about; but they will not allow this stimulus to be similar to *heat, intemperance*, or other exciting causes. It must be a stimulus *sui generis*, or it would not produce yellow fever. That yellow fever patients did rarely communicate yellow fever, or any other fever, to persons in healthy situations, admits of an easy explanation.

† This Dr. Rush has admitted, but has explained the matter differently. (See Med. Rep. Hex. I. vol. vi. p. 160.)

‡ Agreeable to the information I have received from several country practitioners, the crews of ships stationed at the out-ports are generally healthy till one or more persons fall sick; but as soon as a single instance of yellow fever occurs, the disease spreads from one to another till it goes through the whole ship, and afterwards from ship to ship. The disease has also been traced from estate to estate fifteen miles into the country.

Copy of a Letter from Mr. DAVID BROWN, *Assistant Surgeon to the 60th Regiment, Up-Park Camp, to Dr.* DANCER.

Military Hospital, Sept. 10, 1803.

DEAR SIR,

In respect to the fever that has lately raged with such violence in our hospital, it was *without doubt contagious.*

The reasons I have for entertaining this opinion are shortly these:

1st. No local cause existed that could produce the disease.*

2dly. It went progressively through the battalion; the persons *nearest* the sick being always the *first* who were affected.

3dly. The medical gentlemen who attended (five in number) were all taken ill; one of whom died, and the rest recovered with difficulty.

4thly. The sergeants and orderly men were *all* affected, and many of them died. But,

5thly. What was most singular, *every man employed in shaving the sick fell a victim to the disease.*

These are a few plain facts, known to every officer and private in the regiment.

I remain, dear Sir,
Yours, &c. D. B.

Not to extend this paper beyond the prescribed limits, I shall forbear any comment on the above. The conclusion is not to be withstood!

Kingston (Jamaica), Sept. 18, 1803.

* The situation of Up-Park Camp is as healthy a one as can be well imagined, being two miles from the sea, at a considerable elevation, and fully exposed to the strong sea breezes. There are no swamps or other sources of putrefaction in the vicinage. The barracks are not crowded nor filthy. The hospital, which is lately built, is a model for all others, being spacious, well ventilated, and clean, to almost an extreme of nicety. Yet, notwithstanding all these circumstances, upwards of ninety men have lately, in the space of a few weeks, and during a dry, healthy season, died of a malignant fever, having all the characteristics of yellow fever.

Dr. Ferriar says, "I have known a pestilential fever produced in a new raised regiment, in a quarter where regular troops are always very healthy, and where there is a constant ventilation of the briskest kind." It would appear that there was some fomes of contagion which showed its effects only with persons who had a susceptibility to be acted on.

ARTICLE VI.

ADDITIONAL OBSERVATIONS *on the* NATURE *of* FEVER, *and on the* IMPORTANCE *of* REMEDIES *applied to the* SKIN. *In a Letter from* NOAH WEBSTER, *Esq. to Dr.* MILLER, *dated New-Haven, Oct.* 3, 1803.

DEAR SIR,

IN my letter* to you of the 30th ult. I offered to your consideration some ideas respecting the proximate cause of fever. The following case, however trifling, may deserve to be recorded.

Some time in September last I was stung upon the back of my hand, by a worm which is common upon the maize plant; a worm chiefly of a green colour, and covered with sharp, prickly hairs. These hairs, when applied to the skin, occasion a sensation like that of nettles. The part affected soon became of a florid colour, to the extent of more than half an inch in diameter. The sensation was, in no slight degree, inconvenient. Within a few minutes, perhaps fifteen or twenty, as I sat writing, I observed the red spot on my hand to be covered with moisture, equal to that of the most copious sweat; although my skin, in general, was perfectly dry. This excited my curiosity, and I wiped off the moisture with a handkerchief. Within a minute, or less, the moisture occurred a second time, and was removed. This was repeated, perhaps, ten times; and, at last, the efflorescence of the part gradually disappeared, the skin resumed its natural colour, the uneasy sensation abated, and no further perspiration appeared. —In this instance the whole process of disease, from poison to recovery, was carried on and completed in about half an hour. The morbid action of the poison probably destroyed, at least in part, the tone of the skin and cutaneous vessels; a slight fever succeeded, accompanied with an accumulation of blood, which disappeared in a few minutes, in consequence of a copious excretion of moisture, which carried off the preternatural heat, while the parts were resuming their natural tone.

There are many considerations which incline me to believe that, while the saliva, the gastric liquor, the bile, the chyle, the lymph, and other secretions, are destined to carry on the process of deglutition, digestion, nourishment, and the dis-

* See page 134.

charge of the fecal matter, the excretion by the skin is destined chiefly to carry off the superabundant heat. Indeed, no other means equal to this purpose seem provided by the constitution of animal bodies. The air undoubtedly receives a portion of heat from the skin with which it is in contact; but a dry air is an imperfect conductor, and by no means sufficient to answer the purpose. Aqueous particles seem by nature destined to this end; and hence the tendency of a moist atmosphere to occasion perspiration. The moisture relaxes the skin, and invites the discharge of heat, in an undue degree. This I presume to be the reason why a damp air occasions chilliness, or tends to occasion it, though sometimes counteracted by extreme heat in the air; and hence the debility occasioned by such a moist air. The heat and juices escape with a preternatural rapidity, leaving the surface of the body cold, languid, and prone to disease.

The proximate cause of fever, thus, is any obstruction of the natural discharge of heat; the primary or remote cause is any thing which induces debility in the system, and especially in the parts which secrete the necessary aqueous or perspirable matter. Whatever destroys or impairs the action of the excretory organs must occasion a preternatural accumulation of heat or fever. Where this action is only impaired, or partially obstructed, a slight fever ensues: where the obstruction is more general and entire, a proportional degree of fever must follow.

Many theories have been framed to account for the preternatural heat of the body in fever. But why should we resort to spasm, excessive excitement, &c. to account for one of the plainest operations of nature? All the heat of the body, which exceeds the temperature of the surrounding air, *must* be, and the most of it *is*, inhaled by the lungs; and why should we resort to any other cause for an unnatural degree of it, than to an obstruction which prevents its regular discharge?

What is local inflammation but an accumulation of blood and heat in a part, the vessels of which are so impaired as to be unfit to separate the red from the serous part, and to carry off the heat which is constantly conveyed to the part by the circulation? Is not topical inflammation cured by an abstraction of blood, and by epispastics, or other vesicatories and fomentations, which occasion a discharge of the serous part of the blood; in short, by renewing the excretions? Why is fever attended with a dry skin, but because every particle of moisture which can find its way to the surface instantly flies

off with a portion of heat? Philosophers are perfectly well acquainted with the capacity of vapour to contain heat; and the ordinary process of insensible perspiration seems to consist in the discharge of fluids in the form of vapour, charged with the heat imbibed by respiration.

The heat of summer occasions an extreme stimulation of the surface of the body, and an undue discharge of perspirable matter, as long as the vessels continue to perform their functions. But the preternatural excitement often induces indirect debility, and disables the extreme vessels to perform their functions. At the same time, an excessive stimulation of the viscera, and especially of the liver, occasions an undue secretion of the bile, a part of which is forced into the system in various directions, and urged to the surface through the perspiratory ducts, giving to the skin the yellow hue so common in summer and autumnal fevers. But it is probable that this fluid, being too viscid to pass freely through the capillary vessels of the skin, serves to clog those passages, and, finally, aid in producing fever in the system. This is *bilious* fever.

I am led to these reflections, in part, by experiencing the good effects of applications to the skin, in cases of chronic debility. I have, for two or three years, ceased to look for a remedy for this species of indisposition in the shop of the apothecary. For indigestion and languid bowels, a more natural and easy remedy is found in friction applied to the region of the stomach, liver and intestines. A brush (not a flesh brush, for it is too soft), used at night, before retiring to rest, until the body is covered with a glow, never fails to restore tone to the stomach, and invigorate the alimentary canal, so as to procure a natural discharge the next morning; and it is obvious that a languid liver is thus stimulated to secrete its proper fluid to lubricate the intestinal canal. How much better is this practice than to run to the apothecary for pills!

In cases of more confirmed chronic debility, and hypochondriacal affections, the brush may not be sufficient, and the warm bath may be more effectual. To a debilitated frame, whose skin is dry, and whose extremities are cold—in which the peristaltic motion is languid, and the stomach weak or swelled with flatulence—what a luxury is the warm bath! It warms equally every part of the body; relaxes and softens the skin, thereby restoring the excretions; gently stimulates the whole system; renders the circulation equable, and promotes all the secretions. From my own observations, I am inclined to believe that chronic affections, being occasioned

by want of exercise, and a consequent muscular debility, are to be mitigated chiefly by external applications. Nothing will cure them but exercise—action being the natural business of man, and, of course, his natural prophylactic. But friction and the warm bath, by invigorating the muscles, and restoring the excretions, relieve the viscera, or rather excite them to perform their functions far better than cathartics, astringents, and chalybeates.—The orientals, from the highest antiquity, have made great use of the warm bath; and the ancients suffused the body with oil, evidently with a view to relax and soften the skin, and keep the excretions free. The modern Turkish practice of rubbing and pinching the skin, at the time of bathing, is intended for the same purpose. These considerations, and many others, lead me to believe that, in modern practice, physicians pay too much attention to the viscera, and too little to the skin and muscles.

ARTICLE VII.

REMARKABLE SYMPTOMS *consequent upon an* INJURY *done to the* SPINE, *with Remarks. In a Communication from* JONATHAN DORR, *Esq. of Cambridge (N. Y.), dated May* 23, 1803.

ON the 22d of July, 1794, A— A—, aged 36 years, received a blow across the small of his back by the fall of a tree, which partially dislocated his spine between the first and second lumbar vertebræ, and which produced a considerable tumour, and an obtuse angle of the spine, with an entire abolition of all sensation and muscular action in the lower limbs, beginning on a circular line passing around the ossa innominata exactly over the head of the femur, and two inches above the ossa pubis. This was the lowest line of the least sensation, which was determined by puncturing the parts. As low down as another line, three inches above, sensation and muscular action was entire. From the upper to the lower line there was a gradual diminution of sensation. In this situation I visited him five hours after the accident. By adopting the method Mr. Bell directs, the bones were replaced. Stimulants were directed and applied. I visited him the succeeding day, and found his bladder violently distended, and a retention of fæces, without any more pain than a slight uneasiness about the region of the

bladder. After drawing off his urine with a catheter, he became calm. This method of discharging his urine was followed about eight days, after which an involuntary discharge took place; but the rectum has never felt the irritation of distention since, as a manual operation has always been necessary to remove the fæces.

For about three years past his urine has been discharged in the following ways, viz. about one-fourth passed through a sinus, nearly in a lateral direction from the umbilicus, on the right side; one-third through the urethra; and the remainder through the most depending part of the scrotum, through several openings.

I called to see him, as usual, on the 4th of last September, at which time there was not the least vestige of a testicle to be felt. This circumstance led me to propose the following question, viz. whether he ever had any sexual inclination for his wife? He declared that idea was as obnoxious to his feeling as if she was of his own sex. I then inquired whether he ever saluted his wife with his lips? He told me that sensation was not entirely obliterated, but nearly so. The first was extinguished suddenly, and the latter progressively; and all the relative duties on his part were performed from a sense of the moral obligation he was under to her, and not from that peculiar affection that formerly made those duties pleasurable.

Mr. A.'s lower limbs are emaciated to a mere skeleton; his thighs always lying on a line with his body, and his legs longitudinally with his thighs, with his feet so drawn down as to be quite convex on their tops. Notwithstanding this derangement and morbid condition of his lower limbs, above the upper line described before he is full fleshed, and every way firm and healthy as formerly, with a good appetite, and his mental powers as strong and active as ever, and sufficient strength in his arms to move himself out and into bed. To view him, one would imagine the two lines described above are two lines of demarkation, across which no influence could pass.

Does not the gradual abolition of excitement in the lips, following the entire destruction of excitement in the genitals, show the strong connection between those two organs, and help to illustrate the retrocession of the mumps from the throat to the scrotum, when too much exposed to cold, or when repellents are applied? If my patient is correct, how thrice happy are those who have a well-balanced system, that the duties of their lives, through the ills of time, may be made

easy! What a weighty argument is this, to add to many others, to urge to strict economy for the preservation of health.

The retrocession of the mumps, or what Mr. John Hunter calls the "remote sympathetic operation," may proceed from two causes: the first from actual direct organical connection, which organical connection may serve as a medium of communication when a disease is repelled or recedes from one part of our system to another: secondly, from parts reciprocally and mutually irritated and excited into correspondent actions. All parts of our system are drawn into mutual consent by the stimulus of food. If this food produces a healthy action in the stomach, the same kind of action will be propagated through the system. From the perpetual stimulus of food, a perpetual correspondence and uniformity of action is kept up until a strong habit is established. This habit, joined to the sympathetic laws of the animal economy, will answer many singular purposes. I will here give one remarkable instance.—Six years ago I was stung by about thirty bees on my face and neck. I suddenly plunged myself into the water (which was at hand) to extricate myself from a general assault of the swarm. I remained in the water about half a minute. I then emerged from it, and instantly grew faint; and, all on a sudden, my whole surface, even to my legs and feet, exhibited all the characters and phenomena which the parts did that were actually stung, even to the puncture of the sting. This circumstance established me in the opinion, that inoculation with variolous matter, the bite of a rabid dog, scarlet fever, &c. &c. were all local diseases, and that the system never became contaminated by any of these deleterious matters entering the mass of fluids, and there fermenting and assimilating them to its nature, but by propagating the same kind of action through the system that was begun in the point of insertion. The incipient inflammation will extend on the two principles laid down above, viz. by sympathetic laws, and the habit induced by stimulants.

If the system becomes contaminated by assimilation, I judge the work must commence immediately, and the matter suddenly be transferred to the system. To try the ground of these positions more amply by experiment, I vaccinated two persons; and thirty-six hours after vaccination, when a very slight flush appeared around the margin of the incision, but no soreness under the arm, nor any other symptom of absorption, I applied a small bag of wet ashes, which destroyed the spot of

puncture. In a few days a piece of dead flesh sloughed out one third of an inch in diameter, and half as deep as broad. Neither of these persons had the cow-pock.

If Dr. Mitchill's doctrine is true, that acids are the base of all poisons, I think there are strong reasons why alkaline escharotics should be preferred, and in a manner that should *rapidly* destroy to a sufficient extent. For it is certainly probable, that *gently* destroying the point of disease may increase excitability, and thereby call into action the inserted virus. The result of my experiment has made me extremely solicitous that some gentlemen who may have an opportunity should try the method proposed in one of the volumes of the Medical Repository, of destroying the part bitten by canine rabies. The result of my experiments on the vaccinated persons has greatly strengthened my faith that the plan laid down could not fail of success.

REVIEW.

ART. I. *Journal of* Andrew Ellicott, *late Commissioner in behalf of the United States, during Part of the Year* 1796, *the Years* 1797, 1798, 1799, *and Part of the Year* 1800; *for determining the Boundary between the United States and the Possessions of his Catholic Majesty in America: containing occasional Remarks on the Situation, Soil, Rivers, Natural Productions, and Diseases of the different Countries on the Ohio, Mississippi, and Gulph of Mexico; with six Maps, &c. With an Appendix, &c.* 4to. pp. 450. *Philadelphia.* Dobson. 1803.

IN the review which we gave in our first Hexade, vol. vi. p. 184, of the fifth volume of the American Philosophical Transactions, the Astronomical and Thermometrical Observations of Mr. Ellicott were regularly noticed. To that account of the portion of the present publication which is contained in a large appendix, we request our readers to turn. For we observe that this part of the book now before us is little else than a republication of what had been before printed in the memoirs of the Philadelphia society.

Mr. Ellicott has now favoured the public with the diary which he kept while employed in the public service, during the years mentioned in his title-page; and we propose to give our readers a brief review of it. We are sorry to begin our criticism with a difference of opinion concerning certain opinions contained in his preface. After some sensible remarks on the adventures and discoveries of Father Hennepin and M. La Salle, along the Mississippi, and in the neighbourhood of the Mexican Gulf, he proceeds to observe, that, by the cession of Louisiana to the United States, it does not appear that we gain the whole of both sides of the Mississippi, because "the island of New-Orleans, which lies on the east side of it, only extends north to Manchac; from thence northwardly along the east side of the river to the southern boundary of the United States, is still held by his Catholic Majesty as a part of West-Florida, and which separates the island of Orleans from the other possessions of the United States on the east side of the river." He observes that we gain by the cession but

little on the Gulf, and are not much benefited as a maritime people; and that the important and safe harbours in both the Floridas still remain in the possession of the Spaniards.

If these remarks had been made by an ordinary person, we should not have wondered at their want of correctness. But when they proceed from a man respectable for his proficiency in science, and for the opportunities he has had to gather information concerning the limits of Louisiana, it would be improper to suffer the person who peruses the work to stumble on the very threshold. There is no country known at present by the name of *West*-Florida, except in books of *English* geography, and by those who copy and imitate them in this country. When Florida was subject to the British Crown, it was, indeed, divided into two provinces, the East and the West. But when it was surrendered again to Spain, this distinction, which had been temporary and local, was discontinued, except in the books and maps published in Britain and Fredon.* The other nations of the earth seem never to have recognized the name of *West*-Florida in geography. On the other hand, the eastern boundary of Louisiana, as understood in the cession to the United States, is the Bay and River Perdido, which are situated about half way between Mobile and Pensacola. These are the boundaries of Florida on the west, and of Louisiana on the east. And to this limit does the Fredish claim extend, including not only all the waters of the Mississippi, but also all those of the Mobile.

The author is not more correct in his statement of the contracted boundary of Louisiana on the Gulf. For as it is understood to comprehend the country along shore from the Bay of Perdido quite to the Bay of St. Bernard, nobody who understands the extent of it will speak of the littleness of the acquisition, or of the want of harbours to accommodate a commercial and maritime people.

After these observations on what we deem to be mistakes as to the boundaries and extent of Louisiana, we proceed to consider the Journal of Mr. E. and to attend him at least on some part of his journey to the western and southern regions. He travelled from Philadelphia through a part of Maryland to Pittsburgh, and thence down the Ohio to its junction with the Mississippi. He afterwards descended this latter River to Natchez, to the Pearl or Half-way River, and to New-Orleans. Thence he proceeded to Mobile; and, after various inland ex-

* The territory of the United States.

cursions, to Pensacola and St. Mark's; and thence round by Florida Keys and Biscana to the island of St. Simon, in Georgia, the town of St. Mary's, and up that river to the neighbourhood of its source in Okefonoke Swamp.

But it will be expected that we give a more particular account of Mr. E.'s Journal. This we shall do to as great extent as the work itself, or the plan of our's will permit. For it may be observed, that many parts of the narrative consist, in so large a proportion, of the way-faring occurrences and accidents which befal most travellers through newly settled and desert tracts, that we shall not dwell upon them, but animadvert only upon the more memorable facts, as we turn over the pages of the volume.

The author has divided his work into ten chapters. In the first of these he mentions an experiment which is worthy the attention of those who make practical use of thermometers. Mr. E. observed one morning, that, during the prevalence of hoar-frost, the quicksilver at his window was 40 degrees, among the grass on the ground 35, and on a fence-rail covered with frost 34; but on scraping some of the crystals of ice together, and applying them to the bulb, the mercury fell to 32. This is a full correction of a mistake into which some respectable observers have fallen, that frost was sometimes produced in a warmer temperature than 32. The reason of the error is, that the bulb of the thermometer was not brought in contact with the refrigerated body.

He mentions the situation of Galliopolis, on the high western bank of the river Ohio. It is inhabited by a number of miserable French families. "Many of the inhabitants that season fell victims to the yellow fever, which certainly originated in that place, and was produced by the filthiness of the inhabitants, and an unusual quantity of animal and vegetable putrefaction in a number of small ponds and marshes within the village." (p. 13.) He has told some valuable facts relative to the salt manufacture at the lakes and springs of Kentucky; and made particular mention of the *Great Cave* as a natural curiosity. This voyage from Pittsburgh to Fort Massac and the Mississippi is accompanied by maps of the Ohio, with all its turnings and windings; the materials for which were the best that could be procured by Mr. E. himself, and his friend Don Jon Ferrer, an ingenious Spanish astronomer.

We find the second and third chapters mostly employed in details of daily occurrences, and in recitals of events immediately connected with Mr. E.'s mission. As they contain

very little of that kind of information which falls within the limits of our review, we pass them over, with observing that we learn from the former of them that he proceeded down the Mississippi to Natchez.

In the fourth chapter we find a valuable historical and practical account of that extraordinary river. Its current, the bodies which are floating in it and put in motion by it, its banks, shoals and islands, its vegetable and animal productions, its curvatures, swamps, and passages or mouths through which it disembogues into the Gulf, are the subjects of particular and judicious description. Our readers who are curious to examine for themselves will be repaid for the trouble they may take to peruse this chapter of the work. It is illustrated by charts of the river, from the mouth of the Ohio to the ocean.

The whole of the fifth chapter, and the principal part of the sixth, are occupied with the history of the difficulties, embarrassments, disputes and negociations which were thrown in the way of the mission. They will be found interesting to those who wish to know that part of our civil history; but lying without our province, we pass them by, observing, however, by the way, that the notices concerning the Pearl River and Lake Pontchartrain are replete with geographical information. We pass over the seventh and eighth chapters hastily, because of their being chiefly composed of materials which, though intimately connected with the object of Mr. E.'s appointment, are foreign to the purposes of our review.

In the ninth chapter many curious facts are told of the prevalence of calcareous earth on the Apalachy, the Chattahocha and the Flint Rivers. Vast strata of limestone are found on this southern frontier; and it appears to be the prevailing basis of the soil, and almost the sole ingredient of the rocks, islands and keys quite round Cape-Florida. It seems to be composed, in many places, of broken shells, and filled with petrifactions. As a specimen of this, we quote Mr. E.'s own words.

"The Florida Reef, as it is called, appears to consist of a number of coral banks on the outer edge of an extensive stratum of calcareous stone, which extends from the main land to the edge of the Gulf-Stream. The general position of this stratum is nearly horizontal, and is possibly a continuation of that observed at Apalachy. If this should be the case, it may be considered as the base of East-Florida, and conform to the general law observed in the disposition of the strata of stone on our western waters.

"On this stratum of stone, which serves as a helmet to the

southern promontory of East-Florida, and defends it from the violence of the Gulf-Stream, is situated the whole of that cluster of innumerable islands and shoals which have been so troublesome and dangerous to navigators.

" These islands and shoals may be viewed as protuberances (standing on the surface of this extensive stratum), gradually formed during a period of many centuries, by the constant accretion of calcareous matter. Many of those islands and shoals have evidently had their origin from coral banks, which, not only like those of oysters, are known to increase, but to surpass them greatly in magnitude; and it is now reduced to a certainty, that a number of the islands in the South-Sea are coral rocks covered with a stratum of earth. It is likewise well ascertained by naturalists, that coral is not, as was formerly supposed, a vegetable substance, but a vast collection of small animals which build up those rocky edifices from the bottom of the ocean."

We pass over his ingenious remarks on the Gulf-Stream to offer our readers the sooner Mr. E.'s highly important observations on fevers. These are contained in his last chapter, and on account of the good sense and useful matter they contain we insert them entire.

" The prevailing diseases on the lower part of the Ohio, on the Mississippi, and through the Floridas, are bilious fevers. They vary in their forms according to the state or force of their remote and exciting causes: some seasons they are little more than the common intermittents and remittents which prevail in the middle States, but in others they are highly malignant, and approach nearly to, if not become the genuine yellow fever of the West-Indies.*

" Although fevers are the prevailing diseases in the tract of country above-mentioned, others are not uncommon, which, though very different in their appearance, probably owe their origin to the same causes. In the summer of 1797, while our people were afflicted with bilious fevers, the Spanish soldiers in the same town were suffering with dysenteries, and which generally proved mortal. During the prevalence of those two diseases, our physician reported to me two cases of a genuine pleurisy, both of which yielded to bleeding. At that time

* " Gen. Sinclair, who had the advantage of a medical education, and is, moreover, a gentleman of a discriminating mind, and distinguished talents, has assured me, ' that he is well convinced the yellow fever is an endemic complaint in a large portion of our south-western country, where he resided as Governor a number of years.'

(and I yet see no reason to alter my opinion) I supposed those different complaints had their origin from the same cause, and that their different appearance arose from accidental causes, such as difference of constitution, or the manner of living. Our physician, who for nearly two months attended the Spanish soldiers, informed me that medicines had but little or no effect upon those labouring under the dysentery, and which I was afterwards informed by some intelligent Spanish gentlemen, was thought to be owing to a profuse use of stimulants, such as Cayenne pepper, by their soldiers in that country, which, by its inordinate use, destroyed the tone of the intestines, and rendered them insensible to the most active medicines.

" Various theories have been devised by physicians to account for those malignant fevers which are the scourge of the human race, but the most natural appears to be that of supposing a portion of the system, by some cause or other, to be rendered unfit for animal life, and, therefore, obnoxious to the healthy part, which, from a natural impulse, is constantly endeavouring to expel the morbid matter, and which is probably thrown off by both the external and internal surfaces. If this theory be just, the best means of prevention appear to be gentle cathartics, and frequent cleansing the outward surface, by bathing and changing of the clothes, particularly such as come in contact with the skin. To this practice I attributed my escaping the fever during the time of its general prevalence. If the offensive matter is thrown out of the system as fast as it is generated, and removed from the surfaces, I am of the opinion that but little danger is to be apprehended; but if, on the contrary, it is suffered to remain in the intestines, and on the external surface, and become entangled in foul clothes, the danger will be much increased.

" The variety of diseases in our southern country is not so great as in the middle and northern States. The degree of cold in the southern States, and the Floridas, is not sufficient to make a complete change in the appearance of the prevailing diseases, or to generate those which may be considered endemic in cold countries. But it is different in the middle and some of the northern States, which have not only a sufficient degree of heat, but such a continuance of it, in some seasons, as to produce the malignant fevers of the southern States and West-Indies. The degree of cold, with its continuance, is also sufficient, in some winters, to produce those diseases which prevail most in cold countries, and hence a greater variety of diseases may naturally be expected.

"It has been doubted by some, whether the climate of the middle, and some of the northern States, is capable of producing the malignant fevers of our southern States and the West-India islands; but these doubts would, in my opinion, be removed from the mind of any person who should reside a few years in the latter, unless he was previously wedded to a preconceived hypothesis, or supposed facts, and his mind entrammelled by prejudice.

"A reluctance to admit truth is little less injurious than the propagation of falsehoods; and the longer we contend that the climate of the middle, and some of the northern States, is incapable of generating the malignant fevers of the southern States and West-Indies, the longer we shall be in danger of suffering by these scourges; for while our measures are only taken to oppose a foreign enemy, a domestic one may begin its ravages. Experience teaches us that there are generally three things necessary to the production of the malignant southern fevers—*first*, heat—*secondly*, water, swamps, or marshes—and, *thirdly*, a collection of persons. And whenever we have a long continuation of heat, aided by the miasmata from impure water, and marshes partially dry, loaded with putrid vegetables, added to a large collection of persons, each of whom, by respiration, is constantly rendering one gallon of air per minute unfit for the functions of animal life, we are in danger of being attacked by a malignant fever.

"From the locality of those fevers in the United States, may not a conclusion be fairly drawn, that the cause, or causes, is, or are, in some degree, local also? for if this were not the case, those fevers would not be confined to our large towns on the water, but extend generally over the face of the country; which is contradicted by experience. And again, if the fever had its origin from importation, why is it confined to particular places? The answer, it is presumed, would be, that in those places there is a greater predisposition, from some exciting cause, whatever it may be, to receive the infection. Now let us see to what point this answer would conduct us. If in those places there is a greater predisposition to receive the infection, it follows that this predisposition in some degree depends upon local causes; and if the causes which produce this predisposition to receive the infection can, from concurring circumstances, be increased, may not a just and logical conclusion be drawn, that they may be so heightened as to produce that species of fever which, in a milder form, they prepare the system to receive?

"As those fevers appear evidently to depend, in part, upon local causes, the means of prevention will, in an equal degree, depend upon removing or correcting those causes.

"It is the opinion of many persons, that our large commercial cities would be materially injured if they were thought capable of producing the malignant fevers of our southern country and the West-Indies. This opinion, however plausible, certainly rests upon a slender foundation, because this opinion alone cannot prevent the recurrence of those fevers; and it must be the recurrence, whatever may be the origin, that will eventually be found injurious.

"If those fevers can possibly be generated in our large commercial cities, in the middle and southern States, we may, as has already been observed, be attacked by a domestic enemy, while our measures are only taken to avoid a foreign one. And if it should be discovered that those fevers are not of domestic origin, it must be granted that, from some cause or other, there is a greater predisposition to receive the infection in our large towns and villages, situated on our rivers, than in other places: an investigation of this cause would, therefore, be a subject of the highest importance; for, in all probability, the removing the cause would secure us against this scourge, so injurious to the interests, population, and happiness of our country.

"On this part of the subject I should have been silent, had it not been to correct an opinion which I entertained some years ago, that the climate of the middle States could not generate that species of the bilious fever commonly called the yellow fever; but from a residence of several years to the southward, where those malignant fevers frequently appear, I feel a strong conviction, that in the middle, and some of the northern States, there is both a sufficient degree of heat, and continuance of it some seasons, to generate those fevers in places situated in the neighbourhood of swamps, ponds of stagnant water, and in the midst of such filth as will too frequently be found about large cities and towns."

To this part of the work are added instructive maps of the Floridas.

It would be improper for us to dismiss Mr. E.'s work, without giving our opinion that he has made very important additions to our geography, furnished valuable facts to medicine and geology, and collected good materials for our civil history: and we trust his readers will agree with us, that these important and instructive parts of his book will much more than compensate for the prolixity and dryness of some of his details.

ART. II. *Dissertatio Medica Inauguralis: Sistens Observationes ad Abscessum Bursalem pertinentes, apud Interrogationem publicam, prolocutas et sustentatas, Die Julii* 11, *A.D.* 1801, *habitam: Quam, annuente summo Numine, ex auctoritate Reverendi* Josephi Willard, *S. T. D. LL. D. Universitatis Harvardianæ Præsidis, et Honoratorum et Reverendorum Curatorum et etiam Senatus Academici consensu; nec non Institutionis Medicæ decreto, pro gradu Doctoratus, Eruditorum examini subjicit* Gulielmus Ingalls, *Massachusettensis.* 8vo. pp. 17. *Bostoniæ.* Fleet. 1803.

SO rare has it become for graduates in physic to compose their inaugural essays in the Latin language, that, as far as our recollection serves us, this Harvard candidate is the only one who, since the commencement of our labours as reviewers, has made use of it, in an American college, to convey his opinions. Although attempts have been made in these latter days to discountenance the study of the ancient classics, and bring them into disuse, we have ever lamented the success of such endeavours to favour the indolence and supineness natural to man. Readily, therefore, do we seize the opportunity which now presents of expressing our pleasure on beholding this dissertation, written, not in the vernacular tongue, but in imitation of the Roman idiom. However imperfect the execution, the attempt is entitled to some degree of praise. There is a dignity and an excellence in this kind of literature which we respect and admire, notwithstanding all the fashionable clamour against it. And we do not hesitate to pronounce, that a taste for the writings of ancient Greece and Italy, though it may not make an individual or a nation great, is one of the most agreeable and ornamental accompaniments of greatness. But to proceed with the dissertation.

Mr. Ingalls has chosen to exercise his talents in describing that kind of imposthumation or abscess which occurs in those membranous sacs, called *bursæ mucosæ*, that are situated in the vicinity of such muscles as are subject to considerable motion. The principal matter of the dissertation is a case of bursal abscess, with a comment thereon. The history of this curious disease we shall extract in the author's words, and exhibit it to our readers without translation, that they may at once form a judgment for themselves of Mr. I.'s proficiency as a scholar and a medical student.

"In autumnitate* homo, annos 22 circiter natus, corpore bene constituto præditus, cujusque modus vivendi liberalis fuit, ad meum consilium de acerba femoris affectione petendum, advenit. Ob femoris amplificationem, et calorem præternaturalem per totum membrum circumfusum; atque permansionem doloris, et facultatem ægri ad res usitatas laboriosasque peragendas; considerandum, eventum mali, quod quidem evenit, formationem abscessus alte siti, esse futurum. Ea ratio medendi, quæ progressum morbi maxime interrumpere spectaret, est designata. Ut hæc res consequeretur, diætam rigide antiphlogisticam observari, et vesicatoria frequentur admoveri, necesse fuit. Sic, emplastro epispastico applicato, vis inflammationis, dolorisque severitas, tum remissa tum mitigata est. Hic non silentio prætereundum, me raro ægrum videre; eumque non omnibus meis normis obsequi. Nihilominus paulo post, admotu vesicatorii singuli facto, morbus, omnibus ejus symptomatibus magna ex parte imminutis, genu solum occupavit. Dolor in hoc articulo, et ejus amplitudo, morbum hydarthrum fuisse rheumaticum indicavissent; vero tumor, inter femoris ossis condylum internum et patellam, paulatim accrescens, et pus in eo, digitis palpatum, cedens, sensumque liquidi subtus moventis præbens, rem fuisse abscessum plane demonstraverunt. Qui, usque ad ver, dolore incomitatus, neque ulla repentina corporis commotione stipatus, augescere non cessabat; tunc temporis quidem aspectum formidulosum assumpserat.

"Cum ver aliquatenus consumptum sit, medicorum convocatorum consultationem de morbo tanti momenti, eventusque tam incerti, libertatem habendi postulavi. Medici, consultatione facta, omnes consenserunt, ut quicquid in tumore contentum evacuareter. Igitur, ab suo consilio, tumor lanceola pro abscessu in directione obliqua fuit ita incidendus, ut plaga cum parte pendula fieret; per cujus os quæcunque puris quantitas, nullo aëre ambiente in ejus cavum interim admisso, emitti posset.

"Propter modum inæqualem, quo pus, eo agitato, nunc huc nunc istuc fluxit, perspicuum fuit, ut in cystidibus sit inclusum; autem postea non solum tumorem, eo aperto, esse bursalem, licuit; sed etiam eum de quibusdam sacculis componi, qui duntaxat ad semetipsos mutuo adjunxerunt. Nam tantum unum iter, inter sacculum internum et externum per aperturam parvulam femoris ossi anteriorem, est repertum. Situs

* A. D. 1798.

quorum sacculorum, cum eo bursarum mucosarum ab hodiernis descriptarum, æque ac earum, quas ipse in fœtus cadaver dissecando deprehendi, ad unguem convenit. E quibus diagnosis morbi deduci possit; morbum, nimirum, de quo tractamus, fuisse abscessum bursalem.

" Ob vastam affectionis amplitudinem, arteriæ pulsum insigniter formicantem, enervatumque corporis statum, prognosis morbi valde incerta et quidem infausta fiebat. Sed, non quidem omittendum, ut musculi, post operationem summam firmitatem retinentes, et ægrotus natura corpore bene constituto præditus, prædictionem præstiterunt propitiorem.

" Propter auxilium admodum magnum, in similibus rebus, salubritate aëris ruri deducendum, domicilium, quod non procul abfuit a Bostonia, elegimus; ubi operatio, sub auspicio viri* sua arte præclari, est instituta.

" Incisura, de qua supra diximus, utrisque femoris lateribus facta est. Pus e plaga externa liberaliter effluxit; vero iter per plagæ internæ os corpore lymphæ coagulatæ est obturatum. Tantus fuit obex ut opus fuerit ad incisuræ orificium ampliandum, priusquam materies exhauriri posset. Quæ materies puri non penitus concocto fuit simillima, et tres libras pendebat. Postea totum membrum, ad musculos relaxatos suffulciendos; ad aërem circumambientem excludendum; adque adhæsionem partium disjunctarum adjuvandam; lanea fascia vini gallici spiritu madida, præligabatur. Tumor lympham coagulatam serumque continuit.

" Evacuationem tanti puris in vicinitate magnæ femoralis arteriæ effici non posse, locuplenter patet, sine magnum tumultum in totum corpus afferente; atque nullam attentionem ad constitutionem corporis sustinendam remitti fore; ut hæc ab mali tam gravissimi effectis se recuperaret.

" Quod ideo accidit, ut primum gangræna, post apertum abscessum, ægrum rapido interitu e medio tollere, deinde febris hectica, miserum ægrotantem lenta labe consumere, minataretur.

" Quia hi morbi consimilem tractandi modum exegerunt, tres nunc memorandas indicationes selegimus.

" 1. Scilicet, ad periculum præcavendum, quod e relaxato musculorum statu, enasci posset; 2. Imminutis corporis habitus viribus; atque, 3. Irritabilitate morbida. Quæ absolutæ sunt.

* " Johannes Warren, Anatomes et Chirurgiæ Professor, vir ille clarissimus, qui a proprii sui ingenii vigore usque ad altissimum gradum in re medica cæterisque artibus et scientiis attigit.

"I. A sustentandis femoris musculis, iis fascia constrictis, eo quod nisus suarum particularum in contactum adjuvaretur.

"II. A sejungendo incisuræ labia, penicillo in plagam indito, eo quod et pus vitiatum et aër putridus profluerent.

"III. Ab adhibendo sodam vitriolatam et pulverem rhabarbari, eo quod alvi constrictio solveretur.

"IV. Ab adhibendo hæc medicamenta, ut requirenda sint, vinum, nempe, pulverem corticis cinchonæ rubræ, opium, tincturam opii camphoratam, decoctum radicis serpentariæ Virginianæ, cum tincturis tonicis et astringentibus; ac præscribendo diætam levem, et nutritam; eo quod cum habitus corporis valesceret, tum irritabilitas morbida hebesceret.

"Hæc methodus medendi exitum habuit felicem. Cujus potestati paulatim succubuerunt morbi symptomata; atque sanatio, octo septimanis non prorsus præteritis, est perfecta."

ART. III. *An Epistle to a Friend on the Means of preserving Health, promoting Happiness, and prolonging the Life of Man to its natural Period. By* Charles W. Peale. 8vo. pp. 48. *Philadelphia.* Aitken. 1803.

HE who has lived to the age of sixty, and is still in possession of an active and vigorous constitution, certainly deserves to be listened to when he addresses the public on the subject of health. If we interpret rightly an expression on the sixth page of the performance now in hand, the worthy and amiable writer can speak from an experience of three scores of years. It would appear, both from his practice and his precepts, that he understands the economy of life, and knows how to husband well the portion of vital energy which has been allotted to him. Mr. Peale is already known to us by his Lectures on Natural History, which were reviewed in our first Hexade, vol. v. p. 55. And we are glad, at this distance of time, to meet our old friend once more on the parade, that we may judge of his fitness, carriage and appearance, as he passes again in review.

To an indifferent spectator of the conduct of human beings, it would seem that health was one of the least valuable of their possessions. When they have it, they are intolerably restless and impatient under its influence. The hazards incurred by indulgence in distilled liquors, in scortatory amours, and in gluttony and gormandizing, would incline such a beholder to think that health was to be swapped away at any rate, and that ebriety

and its accompaniments, pox and its consequences, and plethora with its gouty, calculous and paralytic appendages, were some of the commodities received in exchange. So strange a creature is man, that health is thus trucked away for disease, and with it is given a great deal of labour and a good stock of money to boot. But no sooner is the transfer complete, than the inconsistent bargainer grows more uneasy with it than he was before. Sick, and tired, and disgusted with his new acquisitions, he would give any thing to be off, and be restored to his former state. Commonly, however, his chapman holds him to his contract in the most strict and vigorous manner, and refuses to release him upon any conditions whatever. Though sometimes disease consents to a partial relinquishment of the possession gained over his person, upon the condition of his doing constant homage to his sovereignty and paramount authority, and of his paying annual subsidies and tribute to the uttermost of his ability.

Moralists have long deplored the rash precipitancy with which youth expends the choicest portion of its inheritance. The early victims of folly, intemperance and distempers, which are cut down in the blossom by the unrelenting scythe of Time, and hurried prematurely to the grave, are now, as they always used to be, subjects of the deepest affliction and regret to the benevolent heart. To lessen the number of these deluded votaries of sensuality; to persuade old *Chronos* to unhang his instrument, and permit the harvest to drop spontaneously upon the lap of earth; and thereby to prevent the ruin and desolation which ensue, when he mows a full swath through the clustering ranks of lads and lasses; these have been the subjects of medical research and precept from an early period of society.

But how happens it that Mr. P. who has not been regularly educated in medicine, usurps the physician's province, and writes a book of rules and directions about health? The reason he gives is, that being deeply concerned for the recovery of one of his friends, a man of distinction, who was indisposed, he began to write him an affectionate and monitory epistle. The subject, however, so dilated and expanded as he was engaged in it, that it extended far beyond the ordinary limits of a letter, and appeared to him, in its amplified form, to be worthy of publication. And thus it happened that the composition, intended at first for an individual, was ultimately laid before the writer's fellow-citizens at large. The brethren of the faculty will easily forgive the intrusion of such a per-

son as Mr. P. who only plays a little, but does not quarrel with their foibles and prejudices.

As a specimen of the familiar style in which Mr. P. addresses his friend, we quote the following passages.

"*Vice* needs every discouragement to prevent its seeds from growth, and it might be happy if man would consider, that he *cannot long enjoy health with a poisoned mind.*

"Serenity of mind goes a great way to overcome casual disease: therefore, the effect of *good actions* amply rewards men, independent of other duties. The natural ties and dependence we have on each other should obligate us to have a respect for opinions which may not accord with our ideas either of religion or politics. As the same view is not always presented to each of us, the motives in conducing to the adoption of opinions are different; yet, could we compare our ideas with candour, with a forbearing patience, with a view of obtaining knowledge of the moving causes of various opinions on these subjects, not with the design of converting each other, and without insulting the feelings by supposing those differing in opinion from us have bad motives, or a deficiency of understanding; the latter being deemed so great an offence as to be seldom forgiven—were we not to estrange ourselves from each other, because we hold different professions, and to be deficient of that respect due to beings of the same nature, truth would be obtained—we would be much happier—and that hatred which is fed by the want of being better acquainted while estranged from each other, would be greatly lessened.

"That sweet benevolence of disposition, that love of order, that endearing wish of communicating happiness to every animated being that surrounds us, are springs of health that flow in all directions when the passages are kept open, are a never-failing source, nourishing our frail bodies, which need to be supported, at times, by every aid that human invention can devise. With such a disposition of mind, and the proper attention to cleanliness and other means of preserving health, when our cities are visited by calamitous diseases, we need not fear attending on the sick, and fulfilling every tie of duty or gratitude. And the physician who lives according to the strict rules of propriety, and takes some necessary precaution to fortify his stomach with a small portion of nourishment before his visits, will scarcely have cause to flinch from his duty in attending in the chambers of the infected.

"This reflection brings to my mind an idea which I formed

at the time our city was visited by the yellow fever, when I saw the inhabitants on every side quitting their occupations, and flying in every direction to the country, to avoid a disease, whose terrors were such, that too often the diseased fell a victim for want of good nursing, best obtained through the ties of consanguinity; that, had this scourge of our cities brought men to think on their former mode of living, how irregular and discordant to reason and nature; and, being brought thus to reflection, be induced to make a thorough reform in our manners. Then, instead of a scourge, that visitation might rather be called a blessing. But, whether it is indolence, or an obstinate dislike to change, natural to our species, the most obvious improvements, even those subject to be weighed and measured, will not be adopted but through the prevalence of *fashion.* How wonderfully strange that man will not reason and act independently, but that he so frequently will be governed by the opinions of others!

"If this position is true, how very important it is that those from whom the public take their tone should be wise, circumspect and prudent, who will adopt the best customs of every country, and embrace the most beneficial means to *promote economy, health and happiness!*

"*Masters of families*—they also are bound to a performance of *every social virtue;* to be an *example* to their offspring, of *prudence, industry, and true piety;* doing justice to all their connections; to their neighbours, relations, strangers, or in their commercial alliances. If the stock is not good and sound, can it be expected that the branches should flourish and produce good fruit? Not only by good examples, but *by love, the youthful mind must be won to acts of virtue and good conduct,* which is much easier, and certainly more agreeable to a tender parent than coercive means.

"Parents ought to reflect what their feelings were in their youthful days, and not be so rigid as to restrain their children from innocent amusements; they ought rather themselves to return to those sports, which their taste may not then relish; but, with the view of directing a heedless offspring to draw instruction from even passing follies; and rather convince their understanding that many fashionable entertainments do not afford so much pleasure as the imagination may paint them when seen at a distance, and in perspective.

"*Instruction* may be drawn from *every source:* it is necessary to *know danger to avoid it.* I have also observed, that *too great restraint* on youth often forces them to much

greater excess in pursuits of pleasure than would otherwise happen; yet this is not the only evil—they are led to practise deceits, and sometimes to commit frauds, and expose themselves to various dangers, which, could their parents witness, would harrow up their most tender feelings. Ladies, in the bloom of youth, putting on the garb of *trulls*, absenting themselves, under plausible pretences, from their parents, and sallying out in *quest of adventures*—hurrying into the crowded galleries of the theatre under feigned characters, subjugating themselves to insult and abuse: such, and even more *indecorous frolics*, are too often practised, which might be prevented, were parents to accompany and allow the proper relaxation necessary to youth.

"As an admonition to parents, I will relate a scene which, with some variations, is very frequently acted.

"A man, eminent for *scientific knowledge*, *piety*, and *love of order*, zealous in his exertions for promoting public good, benevolent and friendly among his acquaintances, and endowed with patience and perseverance in honourable pursuits, was yet so rigidly opposed to dancing and other fashionable amusements, that he would not suffer his children to partake with their acquaintances in any such entertainments.

"The mother, equally virtuous and good, but viewing these amusements in a more innocent point of view, from a desire to gratify her children, whom she equally loved, and wished to possess every amiable and desirable accomplishment, steals pleasure for them, which she hides from the husband. She permits her sons to go to assemblies, while she watched for their return, to prevent the discovery by the father. Under a pretence of a hurry to finish some work on her hands, she persuades her husband to go to bed, as the avocations of the day, no doubt, had fatigued him; that she would take care to cover up the fire, and shut the house. He retires to bed, but not to perfect rest, only slumbers, through his anxiety to know if his children are at home. He calls, "Has Charles come?" and if it is not time for him to be in bed? She answers in the affirmative, and, to carry on the deception, puts on her husband's boots, and soon after trudges up stairs, kicking the steps as she ascends, to make her husband believe it is his son going to bed.

"This, I conceive, is a melancholy picture in a farcical dress—is virtue outraged—or vice hood-winked; an excess of goodness productive of infinite evils; a jarring of conjugal and filial affections producing deceptions, disobedience, and,

in short, a destruction of the sacred obligations which should bind fathers, mothers, and their children in harmony, duty and love."

Mr. P. insists on the importance of attending to due intestinal evacuations, and on the most convenient means of obtaining them, as follows:

"One other machine I think every family should possess. It is a ridiculous and foolish modesty which can blush at the mention of a remedy of such important use. Is there any means yet discovered which can so speedily give relief, and not derange the stomach, as a glyster? Can any one know its use, and call it nasty? In fact, it is the most ready and effectual means to cleanse away filth. It is true, that if necessitated to get the aid of another person in administering it, that agency is often repugnant to modesty. But when furnished with a convenient *apparatus*, we can retire alone to our apartment, avoiding even the suspicion of any one of the family, and get relief in ten, fifteen, or twenty minutes. In so short a period to be relieved of a violent head-ache, cholic, sickness of the stomach, or, perhaps, to abate a fever and general distress caused by the natural passage being severely bound up,—what sort of modesty can it be that revolts at such efficient means of relief? a false or foolish modesty!

"I have heard it said, that in some cases it only relieves the lower intestines. No one will be so fool-hardy as to deny the salutary effect thus far; but the candid will allow that, by a *repetition* of the injection, the whole of the intestines may be relieved; for as the lower parts are evacuated, the contents of the upper will press forward, aided by muscular force. I do not say that in no case other means may not be necessary, yet I am well convinced that this does not happen once in one hundred cases.

"In the yellow fever I have known injections given *every hour*, and in less than twelve hours the patient, from imminent danger, was in a fair way of recovery. *Bathing*, accompanying *injections*, has proved very efficacious: *tepid* bathing, rather *cool* than *hot*, is preferred.

"One of my children, about two years old, had a complaint of his bowels. At first it was thought of no account, and ripe fruit alone, in such cases, had frequently been found a sufficient remedy. Cherries, then in season, were given him, a fruit too hard and sour; a better choice would have been strawberries, raspberries, or even blackberries. His complaint increased so fast, that in a short time we found his life

in danger. A fever succeeded, with the most dangerous and distressing symptoms: debility increased so rapidly, that probably the disease would have become fatal in less than twelve hours. Injections of *flax-seed tea* were administered *every hour at first*, and as natural stools began to take place, giving more time between them, until nature had acquired its regular course. His food was thickened-milk with hartshorn shavings boiled in it, rice, and other common prescriptions of food. To our astonishment, he recovered so perfectly, that in twenty-four hours he was playing about the room.

"Another of my sons, seventeen years old, had a complaint in his bowels, during my absence at New-York, in 1798. My family, unwilling to hurry me home before my business was completed in that city, did not acquaint me with his advanced state of disease until his situation became so critical that the family was alarmed. It was then they acquainted me that he was not expected to live. The next day I reached Philadelphia, and found my son wasted to scarcely more than skin and bone, and under such extreme debility, that I am positive he could not have lasted many days. I gave him an *injection* of the *flax-seed tea:* it immediately alleviated his pains, and the second application perfected his cure. After this our only care was to nourish him with proper food to restore his strength, and in less than one week he was able to bear a short ride in a carriage, and soon after performed a journey with me to New-York.

"I frequently use this remedy in my family, and always with pleasing success. I have also the pleasure of believing that the same prescription has saved several children in families of my acquaintance.

"As these two cases are very striking, and not common in the prescriptions of physicians of this country, I have particularly mentioned them, in hopes that the practice may be had recourse to in similar ones.

"Although our physicians approve of injections in almost every disease, they too seldom advise their administration, because they often find them troublesome."

Mr. P.'s advice is so replete with good sense, and conformable to sound experience and observation, that we may confidently recommend his pamphlet to the attention of all who are studious to preserve the blessing of health.

ART. IV. *Physical Investigations, and Deductions from Medical and Surgical Facts, &c. By* William Barnwell, *M. D. &c.*

[Continued from Hex. I. vol. v. p. 432, and concluded.]

IT was our intention much sooner to have proceeded in the examination of this performance, and to have brought it to a conclusion in due time. From this intention, however, we have been diverted, on several occasions, by the intervention of publications which seemed to demand more immediate attention, and by other reasons which it would not be interesting to our readers particularly to state. We now, therefore, without further apology, resume the subject at the point where it was left.

The chapter on "The Nature of Infection" treats on a subject of great importance, and which has been hitherto involved in much obscurity. Our attention was forcibly arrested by the title, and we could not but hope, from Dr. Barnwell's opportunities of examining febrile diseases in different parts of the world, and under some of their most malignant forms, that we should find something to satisfy our doubts or to fix our belief. But this hope was completely frustrated. Our author gives no solution of the difficulties which involve the subject, and, indeed, does not seem to have adverted to the points of discussion which are most interesting, and especially require additional elucidation. In general, we find that he believes marsh miasmata and human infection to be combined in the production of the pestilential diseases which have recently ravaged so many of our cities in the United States.

"An Analysis of Medical Surgery" forms the subject of the next chapter. In this, after general preliminary observations, Dr. B. treats of wounds, incised, contused and lacerated—of inflammations, phlegmonous and erysipelatous—of burns and scalds—of dislocations and fractures—of diseases of the skin—and concludes with general remarks. Many of the precepts here delivered are judicious and important; but nearly all of this description are to be found in books of surgery which are in every body's hands.

From this subject Dr. B. passes, in the succeeding chapter, to the consideration of "Bilious Affections and Diseases of the Liver." Here he chiefly treats of the causes of bilious diseases, their nature, &c.—on the treatment of bilious affections—on the information to be derived from the appearance

of bile—on the hepatitis—on the varieties of diseases of the liver—on the treatment of the acute hepatitis or inflamed liver—on the treatment of chronic hepatitis—and concludes the chapter with general observations on the affections of the liver, &c. The importance of these several topics will be obvious to every medical practitioner. Remarks frequently occur which denote diligent and minute observation, as well as an extensive range of experience. The details, however, are often too prolix, and the author is too much inclined to fall into a trite and common-place manner of treating the subject.

Nearly the same character, in our judgment, befits the following chapter on "Diseases of the first Passages," in which Dr. B. dwells at some length on the nature and treatment of choleras, diarrhœas and dysenteries.

In the next chapter Dr. B. proceeds to deliver his observations and opinions concerning "Periodical and continued Fevers." The different species of intermittents, in the first place, engage his attention, from which he passes on to the consideration of remittents; and under both these divisions we find a repetition of many of the judicious remarks of preceding writers, without much exertion to place the subject in new points of view, or materially to improve the common doctrines and practice. Some observations are then offered on typhus, or low nervous fever, which seem properly to come under a similar description. Having finished these subjects, he goes on to a "practical narrative of the pestilential fever" at Philadelphia in 1793, in which he presents a pretty full account of his opinions and practice in that memorable epidemic. A detail, somewhat minute, is likewise exhibited of his claims to originality in the use of blood-letting in yellow fever. But whatever may have been Dr. B.'s merits in the application of this remedy in that season, he does not seem sufficiently to bear in mind that Hillary, Moseley, Jackson, and many other West-Indian physicians, long ago employed blood-letting with great boldness, freedom and success.

The concluding chapter bears the title of "An Historical Introduction to Physianthropy, or the Experimental Philosophy of Human Life, that of Diseases, and also of Remedies." In this, as might be expected, it is the design of the author fundamentally to investigate the principles of the human system in its healthy and diseased states; and, as a specimen of the manner in which this is executed, we offer the following quotation.

"There is in all living animals a principle, the effects of

which are obvious to all men, during the presence of which there is life, but in its absence death: this we may nominate vitality. It is a principle infused by the Supreme Being through all living creatures, under various modifications, which, in the animal creation, is as universal as gravitation in the universe. And although they may be both equally obscure in their causes and modes of operation, yet we may observe, experience, and reason on their effects, and collect the result under different heads, classes, or species; and the information which we acquire hereby may very properly be called the philosophy of the human body, and of its diseases, when we confine ourselves to it. But when we take into the account other substances or causes which affect the human body, it might be called medical philosophy. But as life cannot exist in any animal after birth without the accession of external substances to the body, therefore we cannot consider human life as at any time independent of them, and by itself, as that is a state which never occurs; and therefore we can have no experimental knowledge of it, unless in the embryo, and in that state they act on the mother. But, amidst the variety of substances which continually surround us, we are to make animal life, as it operates on the human body in health and in diseases, the primary and great object of our attention. But as the intercourse between the mind and body is so obvious and constant, it will be necessary, on some occasions also, to pay particular attention to the mind.

"Some of the most general and obvious properties of vitality are sensibility and irritability. These were formerly supposed to be one and the same property, and were always confounded so, until Haller endeavoured to prove that they were different, and resided in different parts of the composition of the body. But although it is certain that many parts are irritable which are not sensible, yet we are not sure that all sense is not caused by irritations, as that is not easily demonstrated; for it is probable that sensibility is caused by more forcible or stronger varieties of irritations on parts properly organized for the purpose. This is very probable, and there are good reasons for it, as will be shown in its proper place; and sympathies, or consent of parts, are only secondary irritations, propagated from one part to another, as the part primarily affected is said to be irritated; but when that irritation is communicated to another part, this is caused by sympathy or consent; but association we would wish to confine to the mind as formerly.

"The vital principle, like many others in nature, we have sufficient reason to believe, may be present in a latent state, and lie dormant for some time, and afterwards show itself, when acted on by stimuli, as in fainting, catalepsy, &c. in human subjects, and in those animals which exist in a torpid state in the winter, as snakes, alligators, frogs, &c. The stimulus of heat is only wanted to rouse the vital principle to energetic actions for life, or its principles must be present, or they could not recover merely upon the application of heat. And in catalepsy or fainting, by irritating parts which are susceptible, as the nose or the stomach, it being easily affected by an emetic, a practice which medical philosophy directed us to, the first time that we knew of it succeeding in this disease; and irritating the nerves of the nose by snuff, volatile alkali, eau de luce, &c. or the palate and stomach by something strongly stimulant, &c. are very useful in recovering persons from fainting or hysteric affections. All these show evidently the power of stimulants on the vital functions of animals, under which we include what were formerly called natural and animal, as the division and the terms are of scholastic origin, the defects of which have been often remarked. Many parts in which the vital principle exists are not sensible, through want of a more complete or appropriate organization, which their uses do not require. But sensation requires organization, or a peculiar intertexture of the blood-vessels and nervous medulla, principally this last, which is the residence of sensibility, as experiments have often demonstrated of late; although the coats of the large nerves are said, by Haller and others, to be destitute of sensation, and the whole trunks of the nerves, according to Robinson, on the animal economy, and also many other parts when in a healthy state. But when any of these parts are diseased, they are endowed with a very acute sensibility, as experience teaches. This appears to be caused by increased or new actions of the diseased parts. Diseases often increase the sensibility, as we may observe where there is much irritation, as in wounds, ulcers, &c.

"As the vital principle is constantly flowing into all parts when in a healthy state, if the parts are used in the exercise of their functions, by moderately expending their vital energy, both the inherent strength and the vital energy are thereby increased, as we may daily observe in the exercise of any limb or organ of young or middle-aged people, and in the heart, intestines, or stomach.

"We must allow of a state of inherent strength in animal

bodies, as it can easily be proved that the fibres and membranes of full-grown animals are much stronger than they are in childhood or infancy. This is what we are to understand by inherent strength, or vis insita, in opposition to weakness; but the vital energy is a different property, and it is more unsteady—always accumulating, and as constantly exhausting, and not long in the same proportion in any part, as air, aliment or exercise may be regulated, and the habit of the patient may be tempered originally; for the same food does not always produce the same stature, strength or vital energy; nor does the same education often produce the same information."

It is neither our inclination nor habit to give much attention to verbal criticism. We are constrained, however, to remark, that mistakes in orthography and other improprieties occur with such frequency and uniformity in this work, as scarcely to allow us to set them to the account of errors of the press.

ART. V. *A Pocket Conspectus of the London and Edinburgh Pharmacopœias: Wherein the Virtues, Uses, and Doses of the several Articles and Preparations contained in those Works are concisely stated; their Pronunciation, as to Quantity, is distinctly marked; and a Variety of other Particulars respecting them given: Calculated more especially for the Use of Junior Practitioners. By* Robert Graves, *M. D. Member of the Royal College of Physicians, London; of the Royal Medical Society of Edinburgh; of the Medical Society of London, &c. &c. &c. From the second London Edition, corrected and improved.* 12mo. pp. 132. *Philadelphia.* J. Humphreys. 1803.

MR. HUMPHREYS has rendered an acceptable service to the physicians of the United States by his American edition of this concise manual, which, within a small compass, comprehends a variety of useful matter, and will conveniently serve as a book of reference when works of more detail are not within reach of the practitioner. The marks of accentuation will be agreeable to all who are studious of propriety in the pronunciation of medical terms.

MEDICAL & PHILOSOPHICAL NEWS.

DOMESTIC.

REMARKS ON SOME PARTS OF NEW-YORK, MADE SEPTEMBER, 1802, BY DR. MITCHILL.

1. *Lake George.*

A DEEP valley of thirty-six miles long, between two mountains of considerable height, filled with some of the clearest water in the world, and interspersed with an abundance of small and beautiful islands, presents a lake that puts you in mind of Horace's "Fons Blandusiæ splendidior Vitro." It is remarkable on three accounts. 1. As near its southern extremity the remains of Fort George are to be seen, a strong hold of great importance in the early settlement of New-York, by protecting it successively against the Indians, the French and the British. A little beyond its northern extremity stands the fortress of Ticonderoga. For these reasons the American historian or antiquarian may range with satisfaction this ground so memorable in our wars. 2. Because the mountains, the islands and the lake present many beautiful and uncommon landscapes. It made me think of the English lakes in Cumberland; though I think Lake George much more nearly resembles the Scottish prospects about Loch-Lomond. The islands are much more numerous, and the expanse greater, but the adjoining mountains not near so huge and lofty. Mr. Alexander Robertson, who has delineated several pieces of American scenery admirably well, or any of the picturesque tourists, might find hereabout views of nature worthy their imitative powers. 3. For the sportsman there is a variety of amusement. The brooks abound in trout; and the lake itself teems with yellow perch, sun-fish, and Oswego bass. The first of these is equal to the trout of any streams that we know; and the latter is justly celebrated, both for the voracity with which it seizes the hook, and his excellent flavour when served up at table. It is not certain that this *black bass*, as he is called, is described in the books of zoology. He affords so much pleasure to the angler and the epicure, that he

well deserves to be mentioned among the foremost of our eatable fishes.

The mountains are composed of silicious sand-stone; and the land around the fort is of lime-stone. Lime-stone also composes the basis of some of the islands.

2. *The Passage of the Hudson down Glen's Falls.*

About fifty miles north of Albany, near Kingsbury, is a very picturesque and magnificent scene. The whole waters of the Hudson fall down a prodigious steep. The country, from between two and three miles above the falls to some distance below them, abounds with calcareous rocks. They are hereabout the superior strata, and lie upon the shistus or slate, which forms, as in other parts of the State of New-York, the solid mass of earthy materials below. A solid bed of this lime-stone crosses the river a little above the place where it descends. The rock there divides itself into so many distinct masses, that when the water is low or scanty it rushes through four different chasms between the calcareous walls. When the river is swelled with rains, all these fissures and interposing mounds are covered up, and the distinction of currents is in some measure lost for about half the distance of their irregular descent. The streams there assume a new modification, and arrive at the bottom by three principal channels. Over these three streams there are as many bridges, affording to travellers the singular spectacle of beholding the roaring and foaming cataract beneath them at the very place where they cross. From the highest part of the largest of these, the distance to the water beneath is about thirty-five or forty feet.

The masses of lime-stone which direct the courses of the waters, and separate their currents, are disposed in horizontal strata as regularly as if they had been laid by a level. In several places they are very abrupt, and terminate with the perpendicularity of a wall. Between them are profound openings, through which the torrent forces its way. At the bottom all the streams re-unite, and proceed in conjunction toward Fort Edward.

This cataract is uncommonly variegated and wild, insomuch that it is impossible to give any tolerable description of it. But all persons who have a taste for grandeur and rudeness in natural scenery, are highly delighted with the prospect which it affords.

The central mass of lime-stone forms an island of such

height as never to be overflowed entirely. A pine-tree is growing on the summit of it. And between this summit and the water-level there are several long and large excavations in the rock, through which spectators may pass, under natural arches, and obtain advantageous views of this noble work of Nature. From this insulated spot, too, can be seen to great advantage the saw-mills, grist-mills and forges, which are moved by portions of the water led off from the main channel of the river to its two sides, and by their well-adapted machinery are performing daily a great amount of work, in wood, grain and iron.

The highest fall made by one of the four currents has a great resemblance to that of the Passaick. The water pitches obliquely into a terrible chasm, which appears to be about as deep. After rushing violently through the narrow channels, it soon grows calm in the great bason which receives it. This is very deep, and we were amused with the sight of several young men, who, for small sums of money, would leap from the bridge, thirty feet and more, into the current, as often as we pleased.

3. *The Falls of the Hudson above Fort Edward.*

A few miles below Glen's Falls the lime-stone ceases. Along the greater part of its extent the Hudson winds his course between its solid and almost perpendicular sides. After leaving the calcareous stratum, the river travels over a bottom of shistic or slaty composition. About half a mile from the ordinary travelling road may be seen a cataract, having considerable resemblance to the upper falls of the Potomack, fourteen miles above Georgetown in Maryland. This is picturesque and grand, but in a style remarkably different from the preceding; though, like it, the scene is eminently deserving to be beheld by persons of curiosity and taste.

4. *The Passage of the Hudson through the Kaatskill and Fishkill Mountains without a Cataract.*

The descent of the river towards Waterford and Troy is interrupted by several smaller falls and rapids, running over strata of slaty rock. Of these the most considerable is near Fort Miller, above Stillwater. After passing many such declivities and steps, the Hudson, travelling from the north, receives the waters of the Mohawk approaching to meet him from the west. This addition determines nearly how high the Hudson is navigable. After its fall at the Cohoes, about

a mile before the junction, the Mohawk is divided into several streams by a few small islands lying opposite to Lansingburgh and Troy. Its southern branch comes within about seven miles of Albany, joining its stream to the North-River exactly opposite to Troy. The influence of this body of waters is immediately perceptible. For though Albany and Troy are so aided by them as to be accessible by sloops of convenient tonnage and capacity for the extensive business those settlements have to transact, it has been found necessary to deepen the bed of the river, by a very laborious and expensive undertaking, in order to render it navigable to Lansingburgh and Waterford. The Hudson thus will be navigable from Sandy-Hook to the Half-Moon Point, adjacent to the northern branch of the Mohawk. In this long course of about two hundred miles there is not a single cataract, nor even a rapid. At Albany the tide flows about one foot. The chief impediments to navigation are some bars of sand and flats of mud, with here and there rocks; such as are common in most rivers.

But between Albany and New-York the Hudson passes two ranges of mountains; and yet neither the *Blue Mountains* nor the *Rockland Chain* give any impediment to its course.

A few observations may explain this remarkable circumstance. The Blue Mountains do not exist on the east side of the Hudson, unless the Taconick Hills, bordering on the western extremity of Massachusetts, may be considered as belonging to them. But admitting this, there is still a tract of level country extending from one of these heights to the other. Through this the Hudson finds its way; and as the Blue Mountains rise seven miles to the westward of the river, it rather passes *by* than *through* them.

Thus it glides along until the width to which it spreads at New-Windsor is contracted to the narrow bounds which restrain it as it holds its almost unchanging course to the south, through the mountains which lie in the counties of Orange, Dutchess, Westchester and Rockland. These seem, in ancient days, to have opposed a dam of granite sixteen miles wide to the Hudson's progress; and formerly to have raised the waters above the lands of the upper country to such a height as to have formed a lake. And there are traces on both sides of its present channel, showing where the probable outlets of the lake used to be, but which are *now dry*, and greatly elevated above the present level.

In the lapse of ages, this mound of mountains appears, either by attrition, undermining, forcible impulse, or some other cause, to have given way to the confined waters, and opened for them a free passage to the ocean. And this has been so completely done, that the mountains between Pollepel's Island and Stony-Point have been cleft to their foundations, leaving a free, profound and sufficient channel between them. On the rugged and ruinous sides of this, the traveller explores the internal stratification of the region to great advantage, while his eye ranges over the picturesque and sublime landscape scenery above and below West-Point with uncommon delight. He beholds marine plants growing near the river's edge, and salt water, in this inland situation, bathing the feet of the mountains. He becomes convinced that the deep channel this river has formed for itself through its rocky obstacles, is a greater and more admirable work of nature than all the cataracts afford.

MACKENZIE'S DISCOVERIES IN AMERICAN GEOGRAPHY.

With uncommon opportunities, and with talents as rare for making use of them, Mr. Mackenzie, of Montreal, has completed two journies or inland voyages of discovery. He has penetrated the continent of North-America from Fort Chipewyan (which is situated nearly west from Fort Churchill in Hudson's Bay) to the Northern or Icy Sea. This was done in 1789. The place where he found what he believed to be tide-water, and saw whales, was in lat. 69 deg. 14 min. N. and long. 135 deg. W. from Greenwich.—After returning from the northern voyage, Mr. Mackenzie undertook one of more labour, hazard and difficulty, from Fort Chipewyan to the westward, and actually traversed the continent to the salt water of the Pacific Ocean. This was accomplished in 1793. His latitude at the place of observation on the margin of the sea was 52 deg. 23 min. 42 sec. N. and his longitude 128 deg. 2 min. W. This enterprising traveller has augmented very much the geography of our continent. The diary of his transactions, with his hardy adventurers, is full of entertainment and interest, and his history of the fur-trade remarkably instructive. The notion of a north-west passage to the South-Sea is now entirely exploded. But a chain of lakes and rivers in a most singular connection has been detected.

The great object for visiting and traversing these northern regions, which are little adapted to agriculture, and possess very little to invite the civilized man, is the trade for furs and

pelts with the aborigines, who are thinly scattered over these extensive tracts of country. Of this branch of commerce Mr. Mackenzie has given an intelligent history. The value of this may be in some measure judged of by what Mr. Mackenzie states to have been the product of one year. The destruction of animals must be prodigious, when the agents of the North-West Company of Montreal alone brought in the following amount: to wit; skins of beavers, 106,000; of bears, 2100; of foxes, 1500; of kitt-foxes, 4000; of otters, 4600; of musquashes, 17,000; of martens, 32,000; of minks, 1800; of lynxes, 6000; of wolverines, 600; of fishers, 1650; of racoons, 100; of wolves, 3800; of elks, 700; of deer, 750; of deer dressed, 1200; of buffaloes, 500; and a quantity of castor.

HISTORY OF PARAGUAY AND FLORIDA.

Don Felix d'Azzara, a naval officer of rank in the Spanish service, has completed a work on the quadrupeds of Paraguay, in South-America. This work, while in manuscript, has been translated into French by M. Moreau de St. Mery, and published at Paris, in two vols. 8vo. Don Gabriel de Cardenas y Cano has published in Spanish an Essay toward an History of Florida.

SPANISH AMERICAN MAPS.

Among the maps published in Spain we observe the following. 1. A chart of the city of Lima. 2. A geographical map of the province and coasts of Buenos Ayres, from the capital to the Island of St. Catharina, in which is included the course of the great river St. Pedro. 3. A map of the Island of Jamaica; including the roads that intervene between that island and those of Cuba and St. Domingo. 4. Plan of Charleston in South-Carolina, with a chart of the coast thence to St. Augustine in Florida.

MAPS OF MASSACHUSETTS AND MAINE.

Osgood Carleton has finished two new American maps, one of Massachusetts proper, and the other of the District of Maine, which is a part of that commonwealth. They are compiled from actual surveys made by order of the General Court, and under the inspection of agents appointed by that authority. They were published at Boston, in 1802, by B. and J. Loring, and contain substantial additions to our geography. The engraving is done by Joseph Callender and Sa-

muel Hill, and does credit to their skill and execution as artists. Both are adorned with vignettes designed by Mr. G. Graham.

The map of Massachusetts extends from Nantucket, and the frontiers of Rhode-Island and Connecticut, which are its most southern limits, to the range of towns lying north of Merrimack-River and Newbury-Port. These border on New-Hampshire, which, with a part of Vermont, are the northernmost boundaries. Between east and west it includes the space from Cape-Cod and Chatham-Beach, on the shore of the Atlantic Ocean, to Williamstown, Hancock, West-Stockbridge, and the other towns which lie contiguous to New-York. The counties and towns are plainly marked out; the former by coloured lines, and the latter by mere strokes of the graver. And many of the roads, academies, meeting-houses, court-houses, rivers, brooks, mountains, ponds, islands, rocks, shoals, falls, bridges, and beds of iron ore, are also marked. Its length is five spans and its breadth three.

Maine is laid down in its whole extent from the towns of Kittery and East-Port, lying southwardly and eastwardly on the Atlantic, to the boundary-line between the United States and the dominion of Great-Britain, which limits it on the north and west. It is also exhibited in the entire space from Piscataqua Harbour, Salmon-River, the New-Hampshire and the Canada lines, on the westerly parts, to Passamaquoddy Bay, Chaputnicook-River, and the line drawn from the north or mean branch thereof, along the province of New-Brunswick, to the province of Quebec. This map is, like the other, divided into counties, and these latter into towns, as far as the settlements have been made. And it gives a very instructive idea of the situation and improvement of this extensive region.

What adds to the value of these two maps is, that they abound with memorandums of the distance in miles from the several towns to Boston, the capital of the State, and likewise from the same to their shire-towns respectively.

Thiery de Menonville's Voyage to Guaxaca, to smuggle the Cochineal Plant and Insect to St. Domingo.

Mr. Thiery was born at St. Mihiel, in Lorraine, and destined for the priesthood; but not inclining to that profession, he applied to law. With this, however, he soon became disgusted, and turned his attention to natural history. Having made great progress in this science under M. Jussieu, at Paris, he conceived the bold idea of enriching the colonies of France with the cochineal insect, which existed at that time only in

the Spanish dominions. On proposing it to the ministry, M. Thiery was sent over to St. Domingo well recommended to the administration there, where he arrived in 1776. The government did not openly espouse his mission, but connived at it. He went to Mexico, and traversed several of its provinces on foot. He secretly cultivated the acquaintance of the Indians and negroes, and made himself master of the management of the insect, (coccus cacti) and of the species of nopal or prickly pear on which it feeds. With their assitance he possessed himself of what he sought, and carried both the plants and animals away to the French colony clandestinely and undiscovered, and landed them at Mole St. Nicholas in good order. They were thence moved to Port-au-Prince, and a garden established for them. He was complimented by the Academy of Sciences, and paid by the government for a while. But the plantation not succeeding so well as was expected, the public patronage was gradually withdrawn. He complained loudly of the neglect of the services by which he had laboured to improve the colony at the hazard of his life and the ruin of his health; and, finally, ended his days in 1780, broken-hearted, for not having received the recompence due to his merit, and not being allowed the support necessary to the success of his arduous project.

The papers of this zealous botanist and cultivator were supposed for a while to have been lost, but were found some time after his death by Mr. Joubert, and arranged and published by the *Cercle des Philadelphes*, a respectable society of arts and sciences established at Cape-François, and which continued to flourish until the overthrow of civil order in that ill-fated island. Mr. Thiery's works were printed, in two volumes 8vo. at the Cape, in 1787. They consist of his voyage to Guaxaca; his treatise on the cultivation of the nopal, and the management of the cochineal insect; and several small pieces on similar subjects. The books are entitled, *Traitè de la Culture du Nopal et de l'Education de la Cochenille dans les Colonies Françoises de l'Amerique; precedè d'un Voyage a Guaxaca, &c.* In the first volume is an *Eloge* of M. Thiery, by M. Arthaud; and in the second are beautiful coloured prints of the plant and animal which M. Thiery had observed with so much attention. By these means have attempts been made to do justice to the memory of a zealous and intrepid man, whose latter days were embittered by the want of what he judged to be an adequate patronage of himself and his labours.

A NEW AND SPURIOUS DRUG.

A substance having the appearance of somewhat like gum-arabic, or rather approaching to gum-tragacanth, has lately been imported and vended in our market. Having been sold as gum-tragacanth, and found to possess very different qualities, the purchaser of a quantity of this spurious article has recovered against the seller in a suit at law, and obtained a judicial decision in New-York for damages. This new production possesses a sort of semi-transparency, and has a specious and inviting look. It tastes somewhat acid, and seems to curdle rather than dissolve in the mouth. It is neither soluble in water, nor alkohol, nor in any known menstruum, to give it value or usefulness. It appears, in short, to be a worthless thing, and is alleged to be the product of the *cactus opuntia*, or prickly-pear in the West-Indies, which, when its thick and viscous leaves are slit or punctured, weeps a juice that concretes into the before-mentioned gummy lumps. Some other suits are depending concerning contracts for it and sales of it.

NEW-YORK HOSPITAL RETURNS FOR 1802-3.

From the annual statement drawn up for the information of the Legislature last winter, we learn that, from the 31st Jan. 1802, to 31st Jan. 1803, there have been eleven hundred and three patients under prescription and treatment by the physicians and surgeons. Of these, 654 are reported to have been cured; 162 remained in the hospital; 88 were relieved; 27 were sent to the poor-house; 106 died; 27 eloped; and 38 were discharged for disorderly conduct. The 941 patients who were disposed of came from various parts of the world, and in the following proportions; viz. from Africa 11, Fredon 472, Denmark 6, East-Indies 2, England 100, France 3, Germany 20, Holland 9, Ireland 256, Italy 1, Poland 1, Prussia 5, Portugal 3, Scotland 24, Spain 6, Sweden 8, and the West-Indies 14. From this it is apparent that more than half the patients entertained in the New-York Hospital are foreigners; and a large proportion of this moiety are British subjects, from England, Scotland and Ireland.

CURIOUS FACTS CONCERNING A DRIFT AND CURRENT IN THE ATLANTIC OCEAN.

Several corked bottles of air have been thrown overboard by persons in voyages across the Atlantic, in different degrees of latitude and longitude, and left to the motions of the waves,

with the view of determining whether there was any current, and where they would be cast ashore. St. Salvador, or Cat-Island, one of the easternmost of the Bahamas, has received several of these floating bodies. This was the land first discovered by Columbus, and it may be conjectured that the natural currents of the air and water had a great effect in wafting his vessels to that spot, which, as subsequent experience seems to have shown, lies in a situation uncommonly favourable to the reception of such things as are freely cast upon the ocean. But we preserve for our readers a Bahama publication, wherein Mr. Eve, Mr. Pratt and Mr. Tucker, all appear as witnesses of some remarkable occurrences, touching this subject.

" *Nassau (N. P.) May* 6, 1803.

" The letter from Mr. Pratt, which will be met with below, will not be a little interesting to the curious. The *coincidence* of another bottle, found near the same spot, within a few months, containing a letter, committed to the sea with the same object in view, by persons whose intentions were wholly unknown to each other, will strike our readers as something very remarkable. But we can mention facts that come within our own knowledge still more extraordinary. About a mile or two from this identical spot, within these eight years, two boats, with the crews of vessels wrecked in the middle of the Atlantic Ocean, first made their landing, after having been one 11, and the other 9 days in open boats, in boisterous seasons, with ten or eleven men in each, and with very little provisions. But to arrive at a climax—*at this very point*, or at least the hills behind it, was the western world first discovered by Columbus in 1491. We speak from historical and local knowledge, having lived ten years in sight of the place. It is remarkable, also, that the *drift* from Africa and from the Gulf of Mexico, equally finds its way to the coast of St. Salvador; and cakes of bee's-wax, known to be African, and logs of mahogany, are frequently deposited on its shores.

" *Mr.* Eve, *Sir*,

" The following letter was handed to me a few days ago by Mr. Robert Culmer, who found it corked up in a bottle at the north side of the Island of St. Salvador, on the 17th of April last, lat. 24d. 16m. N. long. 74d. 50m. W. As the intention of it is to ascertain the general current of the ocean, I think it worth observing, that one of a similar nature was also found a few months ago, within a small distance of the

place, directed to a Mr. Story, of Bristol, and forwarded, agreeably to a note accompanying it, by, Sir,

"Your humble servant,

"ALEXANDER PRATT.

'*At sea, lat.* 33 *deg. N. long.* 66 *deg. W. of the meridian of Greenwich-Hospital, London, May* 8, 1800.

'The theory of general currents, as connected with that of the earth, having a good deal engaged the attention of the philosophers of the present day, the writer of this, impressed with the importance of the subject, avails himself in this manner of a suggestion of M. de St. Pierre. It is only by frequent attempts of this kind, made at different seasons of the year, and in different parts of the globe, that a thorough knowledge of the tides can be obtained. After premising this much, the writer requests whoever may meet with the bottle which encloses this, to have it advertised in some public journal or gazette, together with the day and place of his finding it. Should it be picked up at sea, the finder will be pleased to return it to the ocean, after having noted the latitude, and time at which he found it.

'To identify this paper, and render proof of its authenticity conclusive, the writer signs his name; and he will consider himself personally obliged to whoever will comply with the above requests.

'GEORGE TUCKER, *of Virginia.*'

SLATE-QUARRY ON THE WEST BANK OF THE HUDSON.

In our Hex. I. vol. v. p. 342, mention was made of the quarries of shistus for covering houses, found on the east side of the Hudson, in Dutchess county. Since that time another quarry has been opened on the west bank of the river, in the town of New-Paltz, four miles north of Poughkeepsie, in Ulster county. In respect to colour, consistence, and other qualities, this slate is reckoned to be equal to any other, not excepting that which it has been usual to import from Britain.

REGISTER OF THE WEATHER AT ESOPUS, 120 MILES NORTH OF THE CITY OF NEW-YORK.

The Rev. David B. Warden has kept a regular meteorological register of the weather at Kingston, in Ulster county, from the 1st June, 1802, to the last of May, 1803. He noted the thermometer thrice a day, to wit, at eight in the

morning, and at two and eight in the afternoon. At each of these times, too, he recorded the winds; and, during the day, made an entry in his book of other meteorological appearances. By Mr. Warden's register the following facts appear.

Temperature of the Months. *Prevailing Diseases.*

		8 A M		2 P M		8 P M		
		highest.	lowest.	highest.	lowest.	highest.	lowest.	
1802.	June	78	60	89	64	76	58	Catarrh, measles, and cholera.
	July	82	67	92	74	85	62	Dysentery moderately.
	Aug.	83	66	90	72	86	64	Dysentery with violence.
	Sept.	78	52	88	60	80	58	Dysentery with some abatement.
	Oct.	74	42	84	50	78	44	Catarrhs and fever.
	Nov.	48	29	58	38	57	30	Diarrhoeas.
	Dec.	51	2	58	10	46	2	Very healthy.
1803.	Jan.	51	7	56	13	48	8	Some pleurisies, but healthy.
	Feb.	50	6	46	14	47	10	Healthy.
	March	56	6	75	19	58	18	Some pleurisies, but generally healthy.
	April	72	33	86	34	70	32	
	May	76	36	90	52	70	36	Great snow on the 8th, thirteen inches deep on the mountains, with ice half an inch in thickness.

The Hudson was first passable on the ice Dec. 17. On the 31st January it bore loaded waggons, and was open again on the 24th February.

MIRROR OF THE INCAS.

Mr. Proust is said to have ascertained that the PERUVIAN PYRITES, commonly known by the name of the *Mirror of the Incas*, is purely iron, mixed with carbonic matter, and that, after being dissolved in nitric acid, it did not yield a particle of copper.

METEORIC STONE.

At Ensisheim, in Germany, there is a mass of stone, of the weight of upwards of 200 pounds, called the *Thunder-stone*, and is generally supposed to have fallen from the atmosphere. It is of an oval form, and a rugged aspect. In the year 1800 a piece of this mass was analysed by Professor Barthold, who observed that its texture was so loose that it could easily be separated by a knife, and reduced to a greyish-blue powder. It was intermixed with insulated and irregular crystals of pyrites, which in some parts appeared like small veins. From the analysis, this stone appeared to contain, of sulphur, 0.02; iron, 0.2; magnesia, 0.14; alumine, 0.27; lime, 0.202; and of silex, 0.12.

BARBERRIES NOT PREJUDICIAL TO THE GROWTH OF WHEAT.

There is a general belief that the barberry-bush is extremely injurious to wheat. Great care has thereupon been taken to extirpate it, root and branch, from the land. The following remarks, from the *Edinburgh Farmer's Magazine*, No. X. will show that the opinion is wrong, and the practice ill-founded.

"It is the opinion of many, that the barberry has certain malignant effects upon growing wheat and other kinds of grain, insomuch, that if it happens to grow within three or four hundred yards of these, they will be rendered so unfruitful, that, in place of full ears, little better than husks will be found. A Scotch cultivator having heard that this idea determined his neighbour, a farmer in the vicinity of Cupar, in Fife, to cut out all the barberries growing upon his lands, and that it was likely to spread the destruction of so useful a plant in filling up the gaps in thorn hedges, and even in making a tolerable fence where thorns will hardly thrive, he determined to make trial; and having a hedge of barberries, he sowed, in autumn 1799, two pecks of white wheat, in drills about twelve inches apart, which occupied about 44 falls, within 75 yards of his barberries. It appeared by no means hurt in any stage of its growth; rose to five feet and an half high, and produced a good crop of as fine grain as could be shown. In the course of the winter 1799, he was apprehensive that 75 yards might be too far off; and accordingly, in spring 1800, he sowed a small quantity of wheat just beside the growing hedge, which, to his no small satisfaction, produced as perfect grain as ever he saw. In autumn 1800, the same gentleman made another experiment, within 250 yards of his barberry hedge, which rose to about five feet high, and produced a fine yield of excellent grain. From all which he concludes, that if barberry is malignant to growing corns, it is not in every district of country. But if the malignity of plants can be established, we need not weary ourselves about the smut, mildew, &c. as they may be easily transferred to the malignity of some neighbouring plant! But what is most malignant to wheat, &c. is, perhaps, land under improper culture, which happens through ignorance. Ultimately, he affirms that ignorance is the most baneful weed that can be found within the farmer's enclosure, and ought, along with prejudice, to be most carefully rooted up."

THE LOCUST OR CICADA OF NORTH-AMERICA.

This insect is so frequent, so noisy, and so numerous, that the following observations on its history, by Mr. Peter Collinson, made in the year 1763, and read before the Royal Society of London in 1764, seem worthy of republication.

"In Pennsylvania the cicada is seen annually, but not in such numbers as to be remarkable; but at certain periods, of fourteen or fifteen years distance, they come forth in such great swarms, that the people have given them the name of locusts. About the latter end of April these cicadæ come near the surface. This is known by the hogs rooting after them. They creep out of the ground, near the roots of trees, in such numbers, that in some places the earth is so full of holes that it is like an honey-comb.

"Their first appearance is an hexapode (an ill-shapen grub) with six feet. This is their middle or nymph state. They creep up every thing near them, and fix their claws fast on the shrubs and bark of trees. Then the skin on its back bursts open, and the fly comes forth, disengaging itself by degrees, leaving the case or exuviæ behind, in the exact shape in which it was before occupied.

"At first coming out the cicadæ are all white, with red eyes, and seem weak and tender: but next day they attain to their full strength and perfection, being of a dark brown colour, with four finely-veined transparent wings.

"They come forth out of the ground in the night; being then secure from being disturbed by so many creatures that prey on them, whilst they are under the operation of exchanging one state for another. From the 10th of May to the 15th they are observed to be spread all over the country.

As soon as the dew is exhaled the cicadæ are very active, flying about from tree to tree. The male makes a singing noise, calling the female, which he effects by a tremulous motion he gives to two bladders filled with air under his wings. From their numbers the noise is so loud and troublesome that it interrupts conversation with a continual din, from morning to evening. They continue coupling to the 16th of May. Soon after the males disappear, and the females lay their eggs. They are much larger than the males.

"They never could be perceived eating any thing; yet, as they are furnished with a long proboscis, which they frequently extend, they may suck the dews, or the farina of flowers.

"The male, in coupling, hath, at the end of his tail, two

hooks, with which he enters between the rings that surround the body of the female. These, spreading internally, confine them long together; which may be requisite, as there is a great number of eggs to impregnate; some say six or seven hundred.

"Soon after this work is over the female begins laying her eggs. To assist her in this operation, she is armed with a dart, near half an inch long, fixed between her breast and belly, and which extends to the end of her tail. This she sheaths up when it is not in use. With this dart she pierces the small twigs of trees, and, at the same time, injects an egg.

"It is surprising to see how quick they penetrate into hard wood, and crowd it full of eggs, the length of two or three inches ranged in a line close together, from twelve to eighteen in each partition. How she deposits the eggs in this direction it was difficult to discover, they are so very shy whilst about this work. But my ingenious friend John Bartram, observing her in the beginning of this operation, took a strong wooddy stalk of a plant, and, presenting it to her, she directly fell to work upon it as he held it in his hand. It was very wonderful to see how dexterously she worked her dart into the stalk, at every puncture dropping an egg. This was seen very distinctly, as she did not touch the stalk with any other part of her body.

"The cicadæ fix on most sort of trees, but like best the oak and chesnut, and the sassafras, and all orchard trees.

"They always dart to the pith of the branch, that when the egg hatcheth, the little insect may find soft food in its infant state. When mature, they creep forth, go down the tree, or drop off, and soon make their way into the ground, where they have been found two feet deep. Here they find a secure repose, until they have passed through their changes, from a maggot to a hexapode, and, lastly, to a fly.

"July 15th and 16th they were perceived coming forth. Several darted twigs were perceived, and carefully examined and opened. Some eggs were hatched, others not mature, of a dull brown colour. These were taken out, and spread on a table. In about an hour the eggs cracked. It was very entertaining to observe how the little insect contrived to disengage itself from the shell. When it was got clear from its incumbrances it ran about very briskly, seeking a repository in the earth.

"These cicadæ are spread all over the country in a few days, but, being the prey of so many animals, their numbers soon decrease, and, their duration by the order of nature being short, quickly disappear.

"They are the food of most kinds of domestic and wild fowl; and many beasts, even the squirrels, grow fat with feeding on them.

"And one of the repasts of the Indians, after having first plucked off their wings, is to boil and eat them.

"There are two distinct species of cicadæ in North-America; the one here described being much larger than the other.

"The lesser species has a black body, with golden eyes, and remarkable yellow-veined wings."

BRIGHT METEORS.

The newspapers from North-Carolina, Virginia and New-Hampshire contain accounts of a very remarkable exhibition of meteors, or of shooting stars, seen at Raleigh, Richmond and Portsmouth, toward the end of April, 1803. The beholders have, in the several places, given certificates of what they witnessed. They declare that night the heavens seemed to be all on fire, from the abundance of lucid meteors. They passed over head in all directions, and were too numerous to be counted. One witness counted one hundred and sixty-seven in about 15 minutes, and could not then number them all. This luminous display continued from one until after three o'clock in the morning. Part of the time the light was so great that a pin might be picked up on the ground. The modern opinion of these appearances is, that they consist of phlogistous gas (inflammable air), catching fire in the upper region of the atmosphere. But it is not easy to explain wherefore the air of so many parts of the continent was so over-charged with hydrogenous vapour so early in the season. The coruscations are stated from all parts to have been unusually frequent and brilliant.

ACCOUNT OF A FIRE-BALL.

C. Biot, member of the National Institute, in a letter to the French Minister of the Interior, dated July 20, 1803, gives a detailed account of his inquiries, &c. respecting a fire-ball which fell in the neighbourhood of Laigle. From this the following description of the phenomenon is deduced.

On Tuesday, April 26, 1803, about one in the afternoon, the weather being serene, there was observed from Caen, Pont Audemer, and the environs of Alencon, Falaise, and Verneuil, a fiery globe of a very brilliant splendour, which moved in the atmosphere with great rapidity.

Some moments after there was heard at Laigle, and in the

environs of that city, to the extent of more than thirty leagues in every direction, a violent explosion, which lasted five or six minutes.

At first there were three or four reports like those of cannon, followed by a kind of discharge which resembled a firing of musquetry, after which there was heard a dreadful rumbling like the beating of a drum. The air was calm and the sky serene, except a few clouds, such as are frequently observed.

The noise proceeded from a small cloud which had a rectangular form, the largest side being in a direction from east to west. It appeared motionless all the time that the phenomenon lasted. But the vapour of which it was composed was projected momentarily from the different sides by the effect of the successive explosions. This cloud was about half a league to the N. N. E. of the town of Laigle. It was at a great elevation in the atmosphere, for the inhabitants of two hamlets, a league distant from each other, saw it at the same time above their heads. In the whole canton over which this cloud hovered, a hissing noise, like that of a stone discharged from a sling, was heard, and a multitude of mineral masses, exactly similar to those distinguished by the name of *meteoric stones*, were seen to fall at the same time.

The district in which the stones fell forms an elliptical extent of about two leagues and an half in length, and nearly one in breadth, the greatest dimension being in a direction from south-east to north-west, forming a declination of about 22 deg. This direction, which the meteor must have followed, is exactly that of the magnetic meridian, which is a remarkable result.

The largest of these stones fell at the south-east extremity of the large axis of the ellipse; the middle-sized ones fell in the centre, the smallest at the other extremity. It thereby appears that the largest fell first, as might naturally be supposed.

The largest of all those which fell weigh seventeen and an half pounds. The smallest I saw weigh about two gros, which is the thousandth part of the former.

ACIDITY OF DISORGANIZED ANIMAL MATTER IN CERTAIN CASES.

Dr. Francis Blanchet, of Quebec, has written to Dr. Mitchill, in a letter dated Quebec, Dec. 26th, "That he has become convinced, in the course of his practice, that the

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ACIDITY OF DISORGANIZED ANIMAL MATTER IN CERTAIN CASES.

Dr. Francis Blanchet, of Quebec, has written to Dr. Mitchill, in a letter dated Quebec, Dec. 26th, "That he has become convinced, in the course of his practice, that the

pus of abscesses is of an acid nature, and that the absorption of this acid excites hectic fevers in the constitution. He has proved also, experimentally, the presence of an acid stronger than the carbonic acid in the stables in which cattle are housed during the long and severe winters of Canada." Among the facts which incline him to this opinion are the coagulation of fresh milk, and the decomposition of the carbonate of lime. Dr. Blanchet has likewise tried successfully the external application of carbonate of soda to chronic and obstinate ulcers.

BARTRAM'S HISTORY OF THE CAROLINA MOSS, USED FOR STUFFING MATRASSES.

The long moss, so called, (tillandsia usneoides) is a singular and surprising vegetable production. It grows from the limbs and twigs of all trees in those southern regions, from lat. 35 N. down as far as 28, and, I believe, every where within the tropics. Wherever it fixes itself on a limb or branch, it spreads into short and intricate divarications: these, in time, collect dust, wafted by the wind, which, probably by the moisture it absorbs, softens the bark and sappy parts of the tree, about the roots of the plant, and renders it more fit for it to establish itself: and from this small beginning it increases, by sending downwards and obliquely, on all sides, long pendant branches, which divide and subdivide themselves *ad infinitum*. It is common to find the spaces betwixt the limbs of large trees almost occupied by this plant: it also hangs waving in the wind, like streamers, from the lower limbs, to the length of *fifteen* or *twenty* feet, and of bulk and weight more than several men together could carry; and in some places cart-loads of it are lying on the ground, torn off by the violence of the wind. Any part of the living plant, torn off and caught by the limbs of a tree, will presently take root, grow and increase in the same degree of perfection as if it had sprung up from the seed. When fresh, cattle and deer will eat it in the winter season. It seems particularly adapted to the purpose of stuffing matrasses, chairs, saddles, collars, &c. and for these purposes nothing yet known equals it. The Spaniards in South-America and the West-Indies work it into cables, that are said to be very strong and durable; but in order to render it useful, it ought to be thrown into shallow ponds of water, and exposed to the sun, where it soon rots, and the outside furry substance is dissolved. It is then taken out of the water, and spread to dry, when, after a little beat-

ing and shaking, it is sufficiently clean. Nothing remains but the interior, hard, black, elastic filaments entangled together, and greatly resembling horse-hair.

DESCRIPTION OF A CAVERN IN ULSTER COUNTY, IN THE STATE OF NEW-YORK.

About the distance of fourteen miles south-west from Esopus there is a cavern, which is greater in the extent of its dimensions, and more remarkable, than any other yet explored in this country. It is but a small distance from the habitation of Mr. Zachariah Rosekrans, by whose servant it was discovered a few years ago. This black man became insolent, and refused to labour. He left his master, and concealed himself, during the day, in this subterraneous place, issuing from it in the night to supply himself with subsistence. Finding his situation rather uncomfortable, and, perhaps, feeling penitent, he returned to his master, begged forgiveness, and made known to him his retreat.

The cavern is estimated to be three quarters of a mile in length. The breadth varies from 20 to 40 feet. Its height we judged to be at least 20 feet. A stream flows through it, called, in the language of the Dutch, *Rust-places-kill;* in English, *Resting-place-creek.** This stream, which issues from the mountain to the north-west, turns two mills before it is embosomed by the cavern. It emerges about a quarter of a mile from the Rondout-creek, and falls into it. The passage into the cavern is a considerable distance from its western extremity. It is very narrow, and, as it is perpendicular to the ground level, there is some difficulty in descending. It is evident, from the forms of the blocks of stone which lie under the opening, that it has been made by the splitting of the rock, caused by the expansion of the ice in its cavities.

On the sides and roof of the cavern, which is composed of dark-coloured lime-stone, we observed impressions of shells, calcareous spar, and beautiful white and yellow stalactites, of different size and shape, some of which had much the appearance of a honey-comb. We found none broken off or carried away. The roof is flat, and appears as if it had been cut by a chisel. At the distance of a few rods from the open-

* This name originated from the following circumstance:—When the country to the west of Esopus was yet uncultivated, and without roads, the inhabitants of the first settlements, in the townships of Mombakus and Napenok, required two days to travel to Esopus. They passed the night at farm-houses on the side of the creek: hence it received the name of *place of rest.*

ing, on the west side, the cavern divides itself into two vaults of nearly the same dimensions. Near the eastern extremity there is a fall of water, of unknown depth, beyond which no person has yet ventured. We were informed that the common eel, and a species of the sucker, have been caught in this subterraneous stream. When we visited it the water was so shallow that, in many parts, we could step from one stone to another without wetting the shoe. In some places, however, we found it necessary to creep along the sides of the rock. We felt disagreeable sensations of warmth. Fahrenheit's thermometer stood at 65, when in the common atmosphere it was 57. We saw rotten timber in the chinks of the rock, which doubtless engenders impure air. The water oozes and drops from the roof, and occasions a mistiness so great, that, at a small distance, the flame of a candle is little more than perceptible. After violent rain, the cavern is not capacious enough to receive all the water of the stream: that which it cannot admit rushes past the inlet, and runs in the direction of the cavern. It crosses the road leading to the house of Mr. Rosekrans, and the body of water is sometimes so great that it is troublesome to travellers. The dry bed of the stream is very visible, as it is a smooth rock, from which a shallow soil has been washed away.

BITE OF A RATTLE-SNAKE.

A writer in a Georgia newspaper recommends, for the bite of a snake, the internal and external use of alkali. He cites a case in which he gave frequently five or six grains of salt of tartar *(pearl-ash* is nearly the same) dissolved in a cup of water. The part bitten being scarified, was washed and kept constantly moist with a similar but stronger solution. This treatment was continued for several hours, and relieved all the distressing symptoms. The snake was of what is termed the mockasin kind.

The same writer observes that he has seen *litmus paper* turned red by water in which the teeth of a rattle-snake had been steeped. He also recommends as a substitute for the salt of tartar, the *ley* of wood ashes, which may be extemporaneously made by mixing ashes with water, passing it through a cloth, and letting the sediment subside.

FACTS CONCERNING AMERICAN POT-ASH.

A bushel of wood-ashes commonly weighs about 60 pounds; and it requires 500 bushels of ashes, or $500 \times 60 = 30{,}000$lbs.

to make 2000lbs. or a ton of marketable pot-ash. Thus no more than one-fifteenth of the ashes is vegetable alkaline salt. Thus a bushel of ashes affords four pounds of alkali.

A cord of wood weighs about 3000lbs. and so little solid matter is left after burning, that such a body of wood will not yield more than 100lbs. of ashes, or six pounds and three quarters of alkali. So much of the matter of the wood is converted to gas, and flies off in vapour by the action of fire, that only one-thirtieth part remains behind in the form of ashes.

Thus no more than one-four-hundred-and-fiftieth part of the weight of wood is pot-ash. Hence 300 cords of wood, or wood to the weight of 900,000lbs. must be burned to make a ton of pot-ash.

But pot-ash is afforded to this amount only by the incineration of certain kinds of wood favourable to its production; for there are other kinds which yield no alkaline salt. The trees which produce most of this alkaline salt in the American forests are birch, maple, bass (tilia), oak, and hickory. But the trees which abound in gummy and resinous matter give little or none of the alkali. Hence it happens that no pot-ash can be procured from pine, cedar, or other woods of that kind. Their carbon, instead of concreting with other elements into pot-ash, flies off in conjunction with oxygen, or collects into lamp-black, and scarcely any ashes, or a vestige of pot-ash, is to be found.

EPITOME OF PRACTICAL GALVANISM.

J. C. Carpue, of London, surgeon, has published a compendious tract on Galvanism; in which he describes Volta's pile of metallic plates and battery of glasses—Cruickshank's trough of baked wood—Cuthbertson's apparatus for receiving separately the gases procured from decomposed water, and his condenser and condensing electrometer. Of all these he has given copper-plates, with explanations. He also has added a particular account of Mr. Cuthbertson's self-acting Galvanic apparatus, which, by aid of clock-work, so applies a conductor to the copper end of the Voltaic pile as to give a shock once in a second, when a circle or connection is formed, by means of another conductor, with the zinc end of the pile. To this work is prefixed an account of the best mode of exciting electricity by means of Cuthbertson's glass-plate machine. And the whole is interspersed with practical cases and remarks on the medical use of both the electric and Galvanic modifications of this great natural agent.

THE ACCOMACK PEA.

The Magathy-Bay bean, described by Mr. Dennis in our Hex. I. vol. vi. p. 273, is the cassia chamæcrista, whose history had been written before by Dr. Greenway, and published in the American Phil. Trans. vol. iii. The plant is not peculiar to the shores of the Chesapeake. It grows in New-York, and particularly is indigenous in the town of Hempstead, on Long-Island. It rises spontaneously in dry, poor and sandy land, near the shores of the Sound and the Ocean. Its delicate structure and its yellow blossom have made it known to almost all the farmers; though, looking upon it as a weed, not one of them has ever thought of cultivating it for any purpose whatever, nor even of naming it. Though a *decandrous* vegetable, I have examined many flowers which had but *five* stamens. There would be little difficulty in gathering seed enough to begin the agricultural use of it for fertilizing the ground, without importing it from Maryland, Delaware or Virginia. At Plandome it seemed to be mostly pentandrous; while at Rockaway the chives were in their full and natural number.

LEAD, IRON AND TIN MINES IN THE WESTERN COUNTRY.

The following extract of a letter to Mr. Gallatin, Secretary of the Treasury, is dated at Kaskaskias, in the Indiana Territory, Oct. 18, 1803, and accompanies a report of the committee of the House of Representatives, appointed on the 24th Nov. to inquire into the expediency of amending the several acts providing for the sale of the public lands of the United States.—"You have no guess how the United States are imposed on by the Spanish officers since they have heard of the cession of Louisiana. Grants are daily making for large tracts of land, and dated back; some made to men who have been dead 15 or 20 years, and transferred down to the present holders. These grants are made to Americans with a reserve of interest to the officer who makes them. Within fifteen days the following places have been granted, to wit; 45 acres choice of the LEAD-MINES, sixty miles from this, heretofore reserved to the crown of Spain: the IRON-MINE on Wine-Creek, with 10,000 acres round it, about eighty miles from this place, and formerly reserved by the crown of Spain: 60,000 acres, the common touching St. Louis, heretofore given by the crown of Spain to the inhabitants of the village: the TIN-MINE, though of doubtful value, and 15,000 acres adjoining; and many other grants of ten, twenty, and thirty thousand acres, have been made."

NATIVE GOLD DISCOVERED IN NORTH-CAROLINA.

In Cabarrus county (N. C.) gold has been picked up in lumps and grains to the amount of about twelve or fifteen thousand dollars. It was discovered in the bottom of Meadow-Creek. This is a small stream which falls into Rocky-River, a principal branch of the Pedee. The first piece of this precious metal was found by a boy, in July, 1803, who was exercising himself by shooting small fishes with a bow and arrow. The masses are of different sizes, from very small grains to the unexampled bulk of a lump weighing a quarter of an avoirdupois hundred. This transcends, by far, the piece of native gold which we described in a former volume (Hex. I. vol. iv. p. 201), as sent from Mexico to Spain, for the royal cabinet, on account of its extraordinary size. This Carolinian specimen of 28lbs. on being melted and refined, lost only fifteen per cent. of its weight. The smaller samples lose only from two to five per cent. The Hon. Dr. Nathaniel Alexander, Representative in Congress from that district, has presented to Dr. Mitchill a fine specimen of this native gold, which he received from the proprietor.

The face of the country, in the neighbourhood of this Pactolian water, is, for the most part, very uneven. The soil is barren and rocky. The strata of the rock are nearly vertical, and their direction is from N. E. to S. W. like the other great strata throughout Fredonia. In the interstices and chinks between these strata of rock, over which Meadow-Creek runs, the pieces of gold are found, intermixed with sand. Flint (quartz), and a blue-coloured rock (granite), are the prevailing kinds of rock hereabout. Another sort of earthy matter is irregularly scattered around, which is perfectly black, and covered with a substance resembling soot; as is also another kind of substance which looks like a mixture of tar and sand. The gold has been hitherto discovered only in this one place, and that for a very short space up and down the creek.

The specimen in Dr. Mitchill's possession is of a rich and beautiful yellow, and blended with particles of quartz. Excepting this addition, it seems to be remarkably malleable and pure.

BILL OF MORTALITY FOR PORTSMOUTH (N. H.) FOR 1803.
BY LYMAN SPALDING, M. D. &c.

Complaints.	*Age.*	*No.*
Abscess in the Lungs	19, 53 years.	2
Apoplexy	85, 54, 48 years.	3
Asthma	40 years.	1
Atrophy	2, 12, 2 m. 11 d. 3 m. 2 y. 18, 14 m. 3w.	9
Bleeding from Lungs	55, 61 years.	2
Canker-rash, *i. e. Scarlatina*	11 y. 6, 1 mo. 5, 1, 17, 2, 25, 22, 35, 1, 20, 3, 3, 22, 11, 6, 4, 10 y. 3 m. 6 y. 10m. 9, 37, 3, 3 y. 4m. 4, 12, 16, 1 y.	31
Cholera of Infants	3 years. 6, 18 months.	3
Colic, Bilious	33, 30 years.	2
Consumption	40, 69, 39, 38, 25, 36, 24, 18, 27, 72, 43, 38, 35, 48, 15, 22, 24, 15, 44, 60 years.	20
Convulsions	60, 20 y. 2w. 3, 1, 4 w. 38 y. 1d. 14, 1, 39y.	11
Dropsy	55, 40, 28, 3, 47, 77, 40, 44, 22 years.	9
Dropsy in the Brain	10, 4, 18, 6 months.	4
Dropsy in the Head	2 years.	1
Dropsy in the Breast	21 years.	1
Dysentery	9 months.	1
Epilepsy	40, 1 years.	2
Erysipelas	5 months.	1
Fever and Ague	18 years.	1
Fever, Bilious	17, 40 years.	2
Fever, Pulmonic	50, 22, 46, 50, 72, 23, 62, 56, 70, 72, 7, 77, 35	13
Fever, Typhus	71, 53 years.	2
Inflam. of Bowels	23 years.	1
Jaundice	49 years.	1
Lock-jaw	38 years.	1
Nephritis	43 years.	1
Old Age	87, 88, 74, 80, 74, 82, 78, 78, 86, 86 years.	10
Palsy	58, 82, 36 years.	3
Phrenzy	48, 24 years.	2
Premature Birth		2
Quinsy	2, 22 years.	2
Scrophula	12 years.	1
Casualties.		
Overlaid	1 month.	1
Suicide	28 years.	1
Births.		
Males	106	
Females	107	
Total	213	Total 147

Portsmouth, situated 43 deg. 5 min. N. 6 deg. 26 min. E. long. from Washington, contains about 6000 inhabitants.

NATIONAL CORRECTION OF PESTILENCE ENGENDERED IN CROWDED VESSELS.

Our readers will remember, that in Hex. I. vol. v. p. 69 and 234, we stated two instances of a most malignant and destructive disease generated in ships crowded with passengers from Ireland to this port. The wretchedness and mortality of these unhappy emigrants, stowed almost as closely as articles of merchandize, immersed in filth, and nearly deprived of sustenance, presented a scene which humanity could scarcely endure. The traffic in this kind of crowded conveyance of emigrants had been long carried on by certain owners and charterers of ships in Ireland and elsewhere, under circumstances nearly as disgraceful and atrocious as the slave-trade of Africa. Our narrative and reflections on this subject were inserted in many of the periodical publications of Great-Britain and Ireland, and obtained a very general circulation. Soon afterwards, to the honour of the government, this grievance was brought before the parliament of the United Kingdom, and was treated with the attention which it deserved. We are happy to lay before our readers the following abstract of a statute, entitled; "*An Act for regulating the Vessels carrying Passengers from the United Kingdom to his Majesty's Plantations and Settlements abroad, or to Foreign Ports, with respect to the Number of such Passengers.*" Passed June 24, 1803. Cap. 56.

"It shall not be lawful for any master or other person having the command of any British ship or vessel whatever, which shall clear out from any place in the United Kingdom, after the 1st of July, 1803, to have on board, at or after being cleared out, at any one time, or to convey from any place in the United Kingdom to any parts beyond sea, a greater number, whether adults or children, including the crew, than in the proportion of one for every two tons burthen; and if any such ship shall be partly laden with merchandize, then the master is not to take on board a greater number, including the crew, than in the proportion of one for every two tons of that part of such vessel remaining unladen. § 1.

"And if any master, or person having the command, shall take on board, or if he, or the owners, shall engage to take on board a greater number, such master shall forfeit fifty pounds for each person exceeding the proportion limited. § 2.

"And every ship bound to North-America shall be stored with at least twelve weeks provisions and water, sufficient to afford an allowance per day, during the voyage, of not less than half a pound of meat, one pound and a half of bread,

biscuit, or oat-meal, with half a pint of molasses, and one gallon of water, to each person on board, whether adult or child; and the master is to give out to each at least the said allowance every day, under the pain of twenty pounds for each neglect; and any person demanding a clearance for any such vessel which shall not be so stored, shall forfeit fifty pounds for each person for whom there shall not be a quantity of provisions and water sufficient to afford the allowance directed. § 3.

" Before receiving a clearance for any such ship, the master shall deliver to the officer of customs a muster-roll, distinguishing the passengers from the crew; and every person delivering a false muster-roll shall forfeit fifty pounds for each person omitted or falsely described; and the collector, comptroller, or surveyor of the port, or resident officer, together with one justice, shall muster the passengers and crew immediately before sailing, and search every such ship; and if it shall appear that a false muster-roll has been delivered, or if more persons shall be found on board than in the proportion allowed, or if the ship shall not be stored with provisions and water as above, then such collector or comptroller, or the principal officer of customs, together with any such justice, may seize and detain such ship, and the master, until he or the owners shall find bail to the amount of the penalties; and no clearance shall be given by any officer, until the said officer, together with such justice, shall have mustered the persons on board, and shall have searched the ship as directed; and if, upon such inspection, the regulations of this act shall be found to have been complied with, a copy of the said muster-roll shall be certified by such officer, to be delivered to such master, and shall be preserved on board, and the original muster-roll remain at the custom-house. § 4.

" If upon such muster, or otherwise, any passenger shall signify to such officer of customs, or to any justice, that he is desirous of being re-landed, such officer and such justice are to take such person out of the ship. § 5.

" No passenger shall be received on board, unless at a port where a custom-house shall be established, or officers of customs shall be stationed, on pain that the master shall forfeit five hundred pounds; and such ship shall be detained until such penalty shall be paid, or good bail be given for the same. § 6.

" No ship carrying fifty persons, including the crew, shall be cleared out, unless provided with a surgeon, who shall produce a certificate of his having passed his examination. § 7.

"And every surgeon shall have a medicine-chest properly stored; and before such ship shall be cleared out, such surgeon shall specify upon oath, before the officer of customs, the contents of such medicine-chest, and that they are good; and the affidavit shall be deposited in the custom-house; and the master or owner failing to provide a medicine-chest, and every surgeon neglecting or refusing to make oath as directed, shall forfeit fifty pounds. § 8.

"The bedding of each passenger shall be aired upon the deck, when the weather will permit, once a day during the voyage, and such ship shall be fumigated with vinegar at least twice in every week, on pain that the master shall forfeit twenty pounds for each neglect. § 9.

"No clearance shall be granted, unless the master and surgeon give bond to keep journals during the voyage, containing an account of the greatest number of persons who shall have been on board at the time of her departure, and during her voyage, and until her arrival at the port of destination, and of the provisions and water on board, and of the delivery of the daily allowances thereof, and of the airing of bedding, and of the fumigating the ship, and of the deaths, and cause thereof; and such master and surgeon shall deliver the journals to the officer at the port of arrival, on return from the voyage, and shall swear to the truth thereof; and the officer shall deliver to them copies of their oaths and journals, and transmit duplicates to the commissioners of the customs: masters or surgeons acting contrary hereto shall forfeit one hundred pounds. § 10.

"It shall not be lawful for any master of any ship or vessel, *other than a British ship or vessel*, clearing out from any port in the United Kingdom, after the 1st of July, 1803, to take on board a greater number of persons, including the crew, than in the proportion of one for every five tons burthen; and the collector or chief officer may muster the passengers and crew, and search such ship, and if more shall be found on board than in the proportion allowed, such master shall forfeit fifty pounds for every person beyond the proportion, one moiety to his Majesty, and the other to such officer, who may detain such ship until the penalties shall be paid. § 11.

"This act shall not extend to vessels in the service of his Majesty, or of the Post-Master-General, or of the customs and excise, or of the East-India Company. § 12.

"If, after any vessel shall have been cleared out, any master shall re-land any provisions or water, he shall forfeit two hundred pounds. § 13.

"But if any passengers shall be re-landed, then such master may re-land, under the inspection of the officer of customs, a quantity not exceeding the proportion sufficient for such passengers re-landed. § 14.

"Commissioners of the customs shall prepare an abstract of this act to be hung up in every custom-house; and a copy thereof, and of the muster-roll, shall be hung up in every vessel, on penalty of twenty pounds on the master. § 15.

"All captains and officers commanding ships of war, or revenue cutters, who shall meet any such ships at sea, shall call for the muster-roll, and search such ship; and if the provisions of this act have not been complied with, may seize and send them to some port. § 16.

"No such vessel shall be cleared out, unless the owners, or the master, shall have given bond that such vessel is seaworthy, and that every passenger, if alive, shall be landed at the port to which he shall have contracted to be conveyed. § 17.

"If any officer of customs shall sign any clearance contrary to this act, he shall forfeit his employment, and also fifty pounds. § 18.

"All penalties shall be payable within Great-Britain in lawful money of Great-Britain, and within Ireland in Irish currency; and any penalty may be recovered in the name of the Attorney-General for England or Ireland, or Advocate for Scotland, or in the name of any person whatsoever, with double costs; and such suit shall be brought within three years; and one moiety shall go to his Majesty, and the other to the use of such person as shall first sue, after deducting the charges of prosecution from the whole. § 19.

"If any person shall commit wilful perjury, or suborn any person to take a false oath, such person shall incur the pains of perjury, or subornation of perjury. § 20.

"Actions for any thing done in pursuance of this act shall be commenced within three calendar months, and brought within the proper county; and the defendant may plead the general issue; and if the jury shall find for the defendant, &c. &c. the defendant shall recover double costs. § 21.

"Nothing in this act shall alter any law for the restriction of artificers from passing to parts beyond the seas." § 22.

We are glad to have it in our power to announce that a second part of Professor Barton's "Collections for an Essay towards a Materia Medica of the United States," has been some time in the press, and may be expected speedily to be published.

FOREIGN.

A COMPARATIVE VIEW OF THE NATURAL SMALL-POX, INOCULATED SMALL-POX, AND INOCULATED COW-POX.

By JOHN ADDINGTON.

Published by order of the Medical Council of the Royal Jennerian Society for the Extermination of the Small-Pox.

NATURAL SMALL-POX.

HISTORY, GENERAL CHARACTER, MORTALITY.

For *twelve centuries* this disease has been known to continue its ravages, destroying in every year an *immense proportion* of the whole population of the *world!!*

A *contagious disease*; in some instances mild, but for the most part *violent*, *painful*, *loathsome*, and *dangerous* to *life*.

One in *six* who have the disease *dies*. At least half of mankind have it; consequently, *one* in *twelve* of the human race perish by *one disease!!* In London 3000 annually; in the United Kingdom 40,000.

Circumstances independent of *Contagion* and *Mortality*; viz. *Danger*, *Eruptions*, *Confinement*, *Loss of Time*, *Expense*, *Requisite Precautions*, *Medical Treatment*, *Deformity*, *and Subsequent Diseases*.

1. One in three has the natural small-pox in a *dangerous* form.
2. It produces *eruptions*, numerous, painful, and disgusting;
3. Occasions *confinement*;
4. *Loss of time*; and,
5. *Expense*, more or less considerable, affecting individuals, families, parishes, &c.
6. Renders *precautions*, for the most part, unavailing;
7. *Medical treatment* necessary, both during the disease and afterwards;
8. Leaves *pits*, *scars*, *seams*, &c. disfiguring the skin, especially the face; and,
9. Is followed by *scrofula* in every form, diseases of the skin, glands, joints, &c. blindness, deafness, &c. &c.

INOCULATED SMALL-POX.

A *contagious disease*; for the most part mild, but in some instances *violent*, *painful*, *loathsome*, and *dangerous* to *life*.

One in *three hundred* inoculated *dies*. In London probably *one* in *one hundred*.

The inoculation of the small-pox having been but partially adopted, has become the means of spreading the infection, and has thus increased its general mortality. In London this increase has been in the proportion of *seventeen* in every *thousand*.

1. One in thirty or forty has the inoculated small-pox in a *dangerous* form.
2. It produces *eruptions* in greater or less numbers;
3. Occasions *confinement*;
4. *Loss of time*; and,
5. *Expense*, sometimes considerable;
6. Requires *preparation* by diet and medicine; care to avoid certain seasons, as extremes of heat and cold; certain periods of life, as early infancy and old age; and certain states of constitution, as general ill-health, teething, pregnancy, &c. &c.
7. Renders *medical treatment* usually necessary;
8. Is liable to produce *deformities* whenever the disease proves severe; and to be,
9. Followed by the same diseases as above enumerated, though less frequently.

INOCULATED COW-POX.

Not contagious; and when properly conducted, uniformly *mild*, *inoffensive*, free from *pain* or *danger*, and an *infallible preventive of the small-pox.*

NEVER FATAL.

During a long series of years, the cow-pox, accidentally received, has been considered as a *preservative* against any future attack of the *small-pox*. Many persons in the dairy-counties, who have had the former in their youth, have remained to old age unsusceptible of the latter.

1. The inoculated cow-pox is attended by no *danger*;
2. Produces a *pustule* on the *inoculated part only*;
3. Occasions neither *confinement*,
4. *Loss of time*, nor,
5. *Expense*;
6. Demands no other *precautions* than such as respect the *conduct of the inoculation*;
7. Requires no *medicine*;
8. Leaves no *deformity* nor *disfiguration*; and,
9. Excites no *subsequent diseases.*

MODE OF PREVENTING IRON AND STEEL FROM RUSTING.

C. Conté has found out a composition that will effectually prevent iron, steel, &c. from rusting. This method consists in mixing with fat oil varnish four-fifths of well-rectified spirit of turpentine. The varnish is to be applied by means of a sponge; and articles varnished in this manner will retain their metallic brilliancy, and never contract any spots of rust. It may be applied to copper, and to the preservation of philosophical instruments, which, by being brought into contact with water, are liable to lose their splendour and become tarnished.

METHOD OF OBTAINING PRUSSIC ACID IN A PURE STATE.

Dr. Schaub has discovered a new method of obtaining Prussic acid in a state of absolute purity. The process consists in pouring upon one part of Prussian-blue half as much sulphuric acid, diluted with an equal quantity of water, and subsequent distillation. The Prussic acid passes over in alcohol; its odour greatly resembles the water of the Lauro-Cerasus. It is a deadly poison to animals.

POT-ASH OBTAINED FROM BUCKWHEAT.

It appears from some experiments made by Citizen Vauquelin, that buckwheat yields, by combustion, a considerable quantity of pot-ash, which may be employed with advantage in the glass manufactories. The ashes of other vegetables contain only from 18 to 20 per cent. of that alkali, or nearly one-fifth; but the ashes of buckwheat contain 33 per cent. orn early one-third.

CULTURE OF THE TREE CALLED LE ROBINIER (ROBINIA PSEUDACACIA. LIN.)

Cit. François de Neufchateau, member of the Conservative Senate, and of the National Institute, has lately published a treatise at Paris, in the form of a letter, on the tree called *Le Robinier*, or the false Acacia, its culture, uses, &c. This tree, he observes, improperly known by the name of false Acacia, was brought from America by Jean Robin, curator of the king's garden, about the year 1620; it was quickly perceived that, in the course of ten or twelve years, it would, in very barren lands, reach the size of an oak of thirty or forty years standing; but it appears that the advantage which it presented of putting forth flowers of an agreeable scent, has hitherto condemned it to be only a tree for show. This has been always the language of the different societies of agriculture, of the ministerial instructions, French and foreign treatises of gardening, &c. &c. In the space of ten years, however, says Citizen de Neufchateau, a number of Robiniers, planted in the *quincunx* form, at the distance of two metres from one another, and valued at not more than six francs, had a cutting or felling worth about 36,000 francs the hectare (a space little more than two acres); and, in the course of the last ten years, has had three prunings or toppings of very considerable value. The same trees, planted in the form of hedges, and cropped every third year, form an impenetrable inclosure, with a very valuable produce. Notwithstanding this, it requires only a slight and meagre soil.

APPENDIX.

To the CITIZENS *of the* UNITED STATES,

The following remarks are addressed by their well-wisher,

N. WEBSTER.

THE appearance of a malignant fever in New-York, the present season, has revived the discussion of the question, Whence does it originate? a question that has been much agitated by the ablest physicians and philosophers in this country and in Europe. Hitherto the investigation has resulted in no satisfactory solution of the question; although every tyro in the controversy is confident of success, and dogmatically asserts, that, with a few extracts from pamphlets, abounding with superficial observations and crude conjectures, he will bring the controversy to a conclusion.

In the year 1793 I was a believer in the common opinion prevailing in Europe and America, that this malignant fever, like the Asiatic plague, is generated in foreign countries only, and in all temperate latitudes must owe its origin and propagation to specific contagion. The observations made during several years, in which our chief towns have been afflicted, together with a laborious examination of authorities, ancient and modern, by which means I have collected more facts than are to be found in any one work written on this subject, have satisfied my mind that the Asiatic plague and the yellow fever, which is a kindred disease, and may properly be denominated the *bilious* or *tropical* plague, are usually generated in the places where they prevail.—At the same time I am a believer in the infection of these diseases. It is evident that in these, as in scarlet fever, dysentery, jail fever, and every species of typhus, the breath and excretions of the sick will communicate a like disease to persons who approach near enough to imbibe them, though not in all cases; yet it can be made evident that the bilious plague is attended with less infection than the other diseases here mentioned; and in a *pure atmosphere* it is demonstrated, by ten years experience in America, that the infection is not sufficient to spread the disease.

With these results, and many others equally interesting to

the happiness and prosperity of my country, which are exhibited, and I think demonstrated, in my History of Pestilential Diseases, my own mind was satisfied, and I had intended to relinquish for ever a subject which belongs more properly to professional men. But the attempt lately made to establish an opinion that the malignant fever of our cities is *exclusively imported*, is pregnant with so much mischief to the inhabitants of those cities, and to the commerce of the country, which that opinion serves to embarrass, by justifying the rigorous and inhuman quarantine regulations of Europe, that I hold it to be a sacred duty to my fellow citizens, not to withhold from them the means I possess of correcting the most palpable errors in the statements which have been made.

Authorities are cited to prove that the *bilious plague* (for so I shall denominate the malignant fever improperly called *yellow*) is not a native or indigenous disease in America, but was introduced originally from Africa or Asia into the West-Indies, and thence into the United States. From one of these authorities, "Tytler's Treatise on the Plague and Yellow Fever," the following passage is quoted.

"When Columbus first visited the West-India Islands we hear nothing of his having found such a disease existing there; nor does it appear that it was known among the many Spanish adventurers who succeeded him, and who subdued such immense tracts on the southern continent." To give weight to the testimony of this author, it is stated that Mr. Tytler was the *compiler of the medical part of the Encyclopædia Britannica*. The following extracts, from authors of unquestionable fidelity, will show what confidence can be placed in such assertions.

Dr. Robertson, in his account of the second voyage of Columbus (History of America, vol. i. b. ii. p. 121. Dublin. 1777), has the following passage, relating to the condition of his followers in Hispaniola, in 1494.

"At the same time, the diseases *predominant in the torrid zone*, and which rage chiefly in those uncultivated countries where the hand of industry has not opened the woods, drained the marshes, and confined the rivers within a certain channel, began to spread among them. *Alarmed at their violence and unusual symptoms*, they exclaimed against Columbus and his companions in the former voyage, who, by their splendid but deceitful descriptions of Hispaniola, had allured them to quit their native country, for a barbarous, uncultivated land, where they must either be cut off by famine, or *die of unknown distempers.*"

These discontents are represented as being at Isabella, a second settlement made by Columbus, at a place selected as being *more healthy* than Navidad, the town first built. p. 117. After appeasing these discontents, Columbus sailed, and made discoveries along the shores of Cuba; and, after a few weeks absence, returned to Hispaniola, where he found his "forces reduced to a very small number. Diseases, *engendered by the warmth and humidity of the country*, had raged among them with much violence: experience had not yet taught them either the art of curing these, or the precautions requisite for guarding against them. *Two-thirds of the original adventurers were dead, and many of those who survived were incapable of service.*" p. 126.

Columbus proceeded to impose a tribute upon the natives of the island, to be paid in gold-dust and cotton. This tribute with the numerous oppressions and violences of the Spaniards, induced those defenceless people to attempt to starve the invaders. To accomplish this, they declined the planting of maize, destroyed the manioc, and retired to inaccessible mountains. The Spaniards were, in consequence of these steps, reduced to extreme want; but the natives were the principal sufferers by famine, which brought on *contagious diseases*, and, *in a few months, more than a third part of the inhabitants perished.* p. 130.

Dr. Robertson has no where described those diseases. He cites for authorities, Herrera, the Life of Columbus, Oviedo, D. Benzon, P. Martyr; works not in my possession. It is sufficient for us that we have authentic history to prove that the Spaniards who first planted America, and prior to any intercourse with Africa or the East-Indies, perished with *violent contagious diseases, with new and unusual symptoms, engendered by the climate*, and that more than a third of the natives of Hispaniola died at one time with like diseases.

Dr. Robertson, b. iii. p. 178, under the year 1504, remarks, that "many of those who came over with Ovando were seized with the *distempers peculiar to the climate*, and *in a short space above a thousand of them died.*" It appears, in p. 160, that the persons who embarked with Ovando, about two years before, amounted to *two thousand and five hundred;* so that more than two-fifths perished, in a short time, with *distempers peculiar to the climate.* Whether the diseases were *yellow*, *scarlet*, or *black*, those who are studious of nice distinctions to favour a theory, may determine for themselves.

In 1510, the adventurers under Ojeda and Nicuessa, who

attempted a settlement on the continent, perished by various means, among which are enumerated "the diseases peculiar to the climate." p. 194.

In 1512, many of the followers of Balboa, who first penetrated across the Isthmus of Darien, and discovered the Western Ocean, were seized with the "diseases peculiar to the country;" by which his force was so weakened that he could attempt no enterprise against the natives. p. 203, 205.

In 1514 Pedrarias was appointed Governor of Darien, and took possession of the country with *twelve hundred men.* Here they arrived in the rainy season. "The village of Santa-Maria," says the historian, "was seated in a rich plain, environed with marshes and woods. The constitution of Europeans was unable to withstand the *pestilential influence* of such a situation, in a climate naturally so noxious, and at a season so peculiarly unhealthy. *A violent and destructive malady carried off many of the soldiers* who accompanied Pedrarias. An extreme scarcity of provisions augmented this distress, as it rendered it impossible to find proper refreshment for the sick, or the necessary sustenance for the healthy. *In the space of a month above six hundred persons perished in the utmost misery.*" p. 208, 209. [Pedrarias had 1200 men, Balboa 450—total 1650; of which 600 died in a month, of a *violent and destructive malady,* engendered by the *pestilential influence* of the climate; but the historian has not told us whether the disease was *yellow* or *black.*]

In 1517 the *diseases of the climate* of Porto-Rico were fatal to some of the followers of Las Gasas. p. 235.

In 1519 the forces of Cortes, when invading Mexico, were "enfeebled by the *diseases peculiar to the climate,* and the loss of several of the soldiers." Robertson, vol. ii. b. v. p. 21. The same fact is mentioned in p. 43, but with the word *distemper* in the singular: "A good number, and among them Cortes himself, laboured under the *distemper peculiar to the climate.*" And in p. 72 the author mentions the small body of forces under Cortes, *which, by the diseases of the climate, were considerably thinned.*

With how little show of truth authors can pretend that the malignant fever of the West-Indies was not known to Columbus and the first adventurers, is evident from these extracts. It is here proved undeniably, that *violent and destructive diseases,* and *contagious diseases, with symptoms new and unknown to the Spaniards, and peculiar to the climate,* attacked the invaders of America on their first settlement, and in every

subsequent stage of their emigration, conquests and settlement. And the havock made among them was the same, in rapidity and extent, as at this day; a third, a half, or two-thirds of the adventurers being swept away in a few months. That Columbus did not find the bilious plague among the *natives* of America is probably true. And let me ask, do the Europeans and Americans find that disease among the *natives* of Africa, at Senegal or Bulama, or among the Siamese? Not at all—no such thing is pretended. The *natives* of the tropics are not subject to that species of fever in any part of the world; and, what is more, it is never known among them, except as an *extraordinary pestilence.* It invades them only at certain periods, as the measles and scarlet fever invade the people of the United States. But it always attacks strangers from a northern or southern cold latitude, when they remove to tropical climates. It attacked the Spaniards on the first discovery of America, as it does now.

That a contagious pestilential fever invaded the *natives* periodically or occasionally, is capable of proof. A disease of this kind, in 1545, destroyed the lives of eight hundred thousand Mexicans—and in 1576, no less than two millions, according to an exact account taken by order of the Viceroy, fell victims to a like distemper. This was not the small-pox, for the historian expressly distinguishes this "contagious distemper" from that. See Torquemada, cited by Dr. Robertson, vol. ii. note 68; and Clavigero, vol. i. 77. The latter author expressly affirms, that, "besides the more frequent diseases, certain epidemical disorders arise at times, which seem in some degree periodical, although not with much exactness or regularity; such as those which appeared in 1546, 1576, 1736, 1762." This author mistakes as to the year 1736—it was 1738, according to another account which I have seen, which is probably the most correct.

That a like pestilential fever prevailed among the Indians, at times, in more temperate latitudes, is a fact equally well attested. That a *pestilential yellow fever* prevailed among the natives of New-England, about two years before the first settlement made by the English, is a fact as well attested as any historical fact on record. The evidence of it is complete and decisive; and that event alone goes far towards settling the controversy respecting the origin of the disease. The proofs are too lengthy to be here inserted; but the reader who is in search of facts, may find the evidence in the first volume of my History of Pestilential Diseases, p. 176, 177, 178.

Many writers, however, have contended that this species of plague was never known in the West-Indies, until introduced from Asia or Africa. Dr. Gamble says it was very fatal in Barbadoes in 1691, and was then called the *new distemper*, and *Kendal's fever*. The French physicians have given it the name of *La Maladie de Siam*, because it was first observed in Martinico at a time when some vessels were there from Siam. Sauvages has given it a like name in his Nosology, and says it was brought to Martinico in a ship from Siam, in 1685. Don Ulloa affirms it to have been unknown at Carthagena and Porto-Bello anterior to the year 1729, vol. i. 44. Dr. Warren, of Barbadoes, informs us that "no malignant diseases are indigenous or natives of the West-Indies, but that such have always been brought in from some other infected places;" though he admits that other sugar islands have several times been visited by these unwelcome guests, at certain intervals, but at no stated periods of time. He states the bilious plague to have been introduced into Barbadoes from Martinico, where it was communicated from some bales of Levant goods, from a fleet of ships from Marseilles. His authority for this opinion was a Mr. Nelson, an English surgeon, who told him the disease showed itself immediately on the opening of these bales. These palpable errors will be all dissipated by a single fact.

St. Christopher's, the island of the West-Indies first settled by the English, was planted in 1623—Barbadoes in 1624. Barbadoes was, when discovered by the Portuguese, and until settled by the English, uninhabited, and of course no yellow fever could have been found in it till settled by men. Owing to a contest between the different claimants of the property, the increase of population was very slow, until the civil contentions in England, between Charles I. and the parliament, grew so serious as to induce many persons to seek peace and safety in a foreign country. The first plantation consisted of about thirty adventurers, under the direction of Sir William Courteen—and the second in 1628, of sixty-four. These settlements were not considerably enlarged for some years; nor was there any trade between Barbadoes and St. Kitts, and the settlements in New-England, except in a Dutch ship or two, until posterior to the year 1640. For these facts I have the authority of Edwards's History of the West-Indies, chapter on Barbadoes, and Governor Winthrop's Journal—passim.

Within five years after the first colonial voyage to the wind-

ward islands, in 1642, and within ten years from the time when Barbadoes became tolerably well peopled, a great proportion of the settlers were swept away by a mortal infectious disease. Fortunately we have two unquestionable authorities for the fact. One is the manuscript history of the celebrated Mr. Hubbard, a work now in the possession of the Rev. Mr. Elliot, of Boston, from which I have extracted the account verbatim.

"In 1647 an epidemic sickness passed through the whole country, affecting the colonists and natives, English, French and Dutch. It began with a cold, and in many was accompanied with a light fever. Such as bled, or used cooling drinks, died. Such as made use of cordials, and more strengthening things, recovered for the most part. *It extended through the plantations in America* and in *the West-Indies. There died in Barbadoes and St. Kitts, five or six thousand each. Whether it was a plague or pestilential fever, it prevailed in the islands,* accompanied with a great drought, which cut short potatoes and fruits."

Governor Winthrop, of Massachusetts, in a letter to his friend, Mr. Richard Vines, who had just before removed from New-England to Barbadoes, gave him some account of this epidemic in Massachusetts. Fortunately Mr. Vines' answer, dated Barbadoes, April 20, 1648, is preserved and printed in Governor Hutchinson's Collection of Papers. In this the writer gives the following account of the epidemic in that island: "The sickness was *an absolute plague, very infectious and destroying*, insomuch that in our parish there were buried twenty in a week, and many weeks together fifteen or sixteen. *It first seized on the ablest men, both for account and ability of body.* Many who had begun and almost finished great sugar-works, who dandled themselves in their hopes, were suddenly laid in the dust, and their estates left unto strangers. Our New-England men here had their share, and so had all nations, especially Dutchmen, of whom died a great company, even the wisest of them. The contagion is well-nigh over; the Lord make us truly thankful for it, and ever mindful of his mercy."

Here we have a clear and sufficiently precise account of an influenza or epidemic disease which invaded the whole continent and adjacent islands of America; and it is remarkable that the events there were precisely the same as have happened in every epidemic influenza of which we have any account. The facts are undeniable. They are simply these:

That *within the tropics* that condition of the atmosphere which produces a general catarrh, or influenza, invariably produces malignant infectious fevers: and hence the influenza is attended, in winter, with a mortal pestilential pleurisy, and is immediately or speedily followed by the deadly malignant fever, called yellow. Sometimes the scarlet fever intervenes between the influenza and the bilious plague, *as it almost always does in our latitudes.* The fact is the same in Egypt: an epidemic influenza is always followed speedily by a deadly plague. Those who want complete evidence on this subject, will find it in my History of Pestilential Diseases, a summary of which is contained in the second volume, beginning p. 346.

These facts unfold the whole mystery which so much puzzled the learned Warren, and has puzzled every later medical writer. But it is not for want of facts or evidence that the learned have been perplexed to account for the origin of the plague, and its periodical recurrence; it has been solely *for want of observations and registers of facts.* If medical gentlemen would extend the range of their observations, and compare cotemporaneous events; and if men generally would note the state of diseases in the country at large, with half the care that they note the smallest political occurrence, there would be no more difference of opinion respecting the origin and contagiousness of distempers, than there is concerning the result of an election. But how is it possible for men to know any thing of the great laws which influence the atmosphere, and controul its vicissitudes, when they limit the range of their remarks to the circumference of a mile—to a single town, city or island? Here is the source of our ignorance and our mistakes. Dr. Warren, a learned and highly respectable physician, had lived a few years in Barbadoes. He found the people generally healthy, and concluded very properly that the island is a healthy one. But in 1732 and 1738 he was astonished at the sudden invasion of a malignant fever, with unusual and mortal symptoms. Like an honest man, he looks around him, and inquires, Whence comes this calamity? Without suspecting what was going on in the atmosphere of the continent and other islands, and influenced, doubtless, by the current popular idea that plague is *carried* from place to place, he recurs to Martinico for infection. A fleet of merchantmen had arrived there from Marseilles, with Levant goods, and the disease, he was told, appeared about the time these goods were opened! Alas, the weakness of man! It is now known this form of plague which appears in Barbadoes

never occurs in the Levant! and the Asiatic plague, with glandular swellings, never appeared in the West-Indies. Away go all the crude conjectures and idle theories of this worthy man! Had this gentleman extended his views, he would have solved the difficulty like a man of science. He would have discovered a severe and universal influenza immediately preceding the bilious plague of Barbadoes—followed by the same disease on the continent and other islands—and in the latter instance (1737) followed by a like pestilential fever in Mexico, which menaced it with depopulation!

(To be continued.)